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Environmental Protection Agency, San Francisco, Calif. Region IX

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FINAL REPORT

of

"THE FEDERAL TASK FORCE FOR HAZARDOUS MATERIALS MANAGEMENT"

of the

WESTERN FEDERAL REGIONAL COUNCIL

REGION IX

August 1, 1973 to June 30, 1977

Compiled by

Charles T. Bourns, Task Force Chairman and
Supervisory Environmental Scientist
Hazardous Materials Branch
Air & Hazardous Materials Division
U. S. Environmental Protection Agency
Region IX

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The U. S. Environmental Protection Agency
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FOREWORD

This report documents the establishment, organization, objectives, procedures of operation and results and outputs of the Federal Task Force for Hazardous Materials Management, a working group sponsored by the Western Federal Regional Council of Region IX. This task force operated from August, 1973 through September, 1977.

Prior to the initiation of the activity reported herein, several Federal agencies approached the Environmental Protection Agency for answers to a number of problems relating to management of hazardous materials which were then surplus to their needs, in deteriorated condition, longer useable, or were hazardous wastes. Among the problems was a situation wherein those materials needing disposal would not be accepted into existing landfills or the few designated hazardous waste disposal sites in Region IX. There also were genuine concerns as to the adequacy of existing sites for receiving some of the materials and for protection of the environment and public safety.

Prior to this time Federal regulatory programs had been established for wastes which were discharged into water or the air, but disposal of hazardous or solid waste to land was not under an environmental protection program. Advisory programs were in existence however, for solid waste disposal and legislation for hazardous waste management was before the Congress.

For the aforementioned agencies, however, the management of hazardous presented problems which were acute and immediately in need of a solution. In order to plan and provide technical assistance to these agencies, it was decided by EPA to call a conference of affected agencies within Region IX to discuss ramifications of the problem and possible interim solutions which might be augmented until a national program could be instituted. This conference was held in August, 1973, and this led to the formation of a task force which operated until September, 1977.

This report discusses in some detail the organization, membership, their considerations, decisions made and activities undertaken to accomplish task force established objectives. The organization of this report is a compilation of the reports prepared by each sub-committee. While a format and style was recommended by the steering committee for the respective reports, each sub-committee deviated to some degree in preparation of their individual reports. No attempt has been made to rewrite or change these for fear of losing or changing their content; however, some reports were either so detailed, included non-essential material (examples of reporting forms, etc.), or too voluminous for this report. For the latter, the committee prepared an abstract or summary which is included herein in lieu of the whole submission.

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CHAPTER 1

THE FEDERAL TASK FORCE FOR HAZARDOUS MATERIALS MANAGEMENT

Formation and Organization

The Federal Task Force of Hazardous Materials Management came into being almost spontaneously as an "ad-hoc" working group on August 2, 1973, as a group decision at the end of a two-day conference called by the Environmental Protection Agency to discuss problems related to hazardous materials management as experienced by several Federal agencies in standard Region IX. All Federal Agencies in Region IX were invited to send a representative to this conference. The response of over a hundred persons, representing fifty-three agencies indicated the wide-spread interest in this subject area.

The meeting was structured as follows: the first morning a presentation was made of existing State and Federal laws and regulations relating to hazardous materials management to focus attention on existing requirements to be met. This was followed in the afternoon by presentations of several agencies of their own particular problems and of the steps they had taken locally to construct and operate facilities to treat or dispose of their own special wastes. These presentations revealed the inadequacy of both singular or overal solutions to existing problems. There was a consensus decision that there was clearly an opportunity for a cooperative effort to solve problems in this area. Another decision was that existing disposal facilities in the Region were both inadequate and incompatible with present and long-range protection of the environment. There was clearly a lack of lines of communication between agencies on matters relating to this problem area and a need for a mechanism to foster communication. There appeared to be opportunities to share treatment facilities and to exchange industrial chemicals. Some agencies, having excesses, were seeking to dispose of significant quantities of chemicals while others were at the same time purchasing the same chemicals. Some agencies had accumulations of chemicals in large volumes, chemicals whose shelf-life had made them now questionable for use or which had recently been "outlawed" for usage (i.e. pesticides). The management of these latter materials posed significant threat to local environment, and for many materials there appeared to be no "solution" to remove them from stock.

Another consensus decision was that is was desireable to continue meeting periodically on an "ad-hoc" basis as a task force and to establish a mechanism to work toward solution of the various problems which were presented. So, a motion was made and passed to establish an "ad-hoc" task force. Mr. Charles T. Bourns, Chief of the Solid & Hazardous Waste Management Program, U.S. Environmental Protection Agency, Region IX was elected Chairman of the task force. It was also decided that it would be more expeditious for the actual work to be carried on by a smaller group; so, an Executive Steering Committee was chosen. The membership of the Executive Committee was selected to be composed primarily of representatives of those agencies with the most severe problems or who indicated an interest in serving. Membership of the final Executive Steering Committee and replacements (as changes were made) is shown in Table 1.

The Executive Steering Committee was given broad powers, i.e., to further delineate and define the problems, to prepare workplans directed toward solutions to problems, appoint sub-committees to work on specific problems or designate individuals to accomplish specific tasks where a committee effort was not indicated, to propose policy and activities to the whole task force, to schedule meetings for the whole task force, and to attend to any other business deemed necessary for the task force as a whole.

The original geographical area of concern was standard Region IX. This designation posed a problem since some Federal agencies were not organized along the standard region configuration. This was resolved by a decision to allow any Federal agency to participate in the whole task Force which had an operating unit in the standard Region IX, regardless of where its administrative regional headquarters was located, and to allow not only agency regional headquarters but also operating units within the Region to participate. For example, three U.S. Forest Service Regions overlap standard Region IX; so all three Regions of the Forest Service participate in the Task Force. The Bureau of Land Management is organized on a state-wide basis. Similarly, different branches of the various Department of Defense agencies also participated. In some cases, a representation from one agency of a Department was designated to represent the whole Department on the Executive Committee. In others, agencies within Departments desired to serve on this committee. In general all agencies who had an interest in hazardous waste management who wanted to participate, did so enthusiastically.

Another problem surfaced at the first meeting. There seemed to be doubt by some agencies that they would be able to participate in a continuing action without some official sanction or sponsorship. The Executive Steering Committee then decided that the Task Force needed a sponsor which covered all the Departments and Agencies concerned in this effort. A review indicated that the Western Federal Region Council (WFRC) came nearest to being "all inclusive"--only the Department of Defense was not an "official" member of that group. DOD, however, did have "ad-hoc" representation on the Council. The Task Force instructed the Executive Steering Committee to approach the Western Regional Council and to request that the effort be adopted as one of its Task Force actions. This was done and the Council agreed.The Task Force was officially "chartered" on April 24, 1974.

The Executive Steering Committee met on the average of every two months. The whole Task Force met once or twice a year, as the need arose. The work, however, was done by the Executive Committee, its several sub-committees and those individuals given specific assignments. This organization resulted in a tight working arrangement which functioned effectively. All participation by individuals was largely over and above the individual's normal working assignment, a further indication of dedication and interest among all the participants. Elected officers and appointed committee membership remained essentially the same during the four year life of the Task Force except where individuals retired or were transferred out of the Region. In the latter cases, the Agencies affected then designated a replacement representative.

The Western Federal Regional Council agreed with the original set of objectives proposed by the Task Force but added an additional one of its own (i.e., to require "coordination with appropriate State agencies"). The original objectives established for the Task Force were as follows:

1. Provide a mechanism for technology and information transfer, for responsible agency personnel within the Region relating to the management of hazardous materials in an environmentally safe manner;

2. Develop and maintain a directory of individuals within agencies who are designated for contact regarding management of hazardous materials and environmental matters;

3. Develop an inventory of excess hazardous materials and wastes (including related information pertaining to these) which are in the purview of these Federal agencies;

4. Explore, develop, and recommend courses of action to the Council to safely manage hazardous materials where problems are identified. This may involve either recommending action to the individual agencies concerned, or implementing a multi-agency cooperative approach;

5. Identify, develop, and disseminate recommended plans of action for environmentally safe management (transportation, storage, resale, recycling, re-use, modification, and ultimate disposal) of these materials; and

6. Coordinate inter-agency actions relating to hazardous waste management when requested by the agencies concerned.

7. Coordinate final disposition actions with appropriate State agencies.

The WFRC designated as the "lead agency" to coordinate and guide this task force, the U.S. Environmental Protection Agency. Mr. Paul De Falco, Jr., EPA Regional Administrator, was designated as the Council member responsible to the Council for accomplishment of the objectives of the task force. The WFRC concurred with the Task Force in its choice of a Chairman and Mr. Charles T. Bourns was designated as the WFRC Task Force Chairman.

The letter chartering the Task Force is shown in Appendix I. This letter includes enclosures showing the first plan of work developed by the Executive Committee. The original charter was amended by the WFRC, August 6, 1975 to establish revised objectives and operating plan, Appendix II. A Roster of the membership of the whole Task Force is shown in Appendix III. The work plan for Fiscal Year 1977 is shown in Appendix IV.

TABLE 1

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Former Executive Committee Members Who Were Transferred from the Region, Withdrew, or Retired:

COL Skinner E. Anderson, USA (former)
CO, Sierra Army Depot (TRANS)
LT Robert Kinney, USA, Sierra Army Depot (TRANS)
Ralph B. Cowles, PPD, FSA, GSA (WD)
H. Ann Inouye, PPD, FSA, GSA (WD)
J.R. Penney, DOI/BLM (RETIRED)
Rolland M. Hamilton, NAVFAC (RETIRED)
Willis L. Burnham, USGS (RETIRED)

Secretariat Liaison: Irv Terzich, EPA

CHAPTER 2

EXECUTIVE STEERING COMMITTEE AND ITS SUB-COMMITTEE ACTIONS

The Task Force effort was accomplished primarily by several sub-committees operating under the guidance and auspices of an executive steering committee which reported directly to the Task Force at large. There were approximately 125 members of the Task Force from which a steering committee was selected representing the 12 agencies with the most serious problems. Various sub-committees were established with members chosen from the roster of the Task Force and supplemented by experts invited from agencies outside this group, both Federal and State. Sub-committees varied in size and numbers of members.

The first order of business of the Executive Committee was to delineate significant problem areas and propose a scope of work to solve them. Several significant problem areas were identified for which there did not appear to be environmentally acceptable or adequate solutions. These are discussed below.

The foremost problem appeared to be that there were either not treatment facilities or disposal sites located within reasonable distances of the Federal agencys which originated these materials or that sites which were designated for receiving hazardous wastes by a State agency appeared to present a potential for either present or future environmental insults. The latter portion of this problem seemed to be composed of two parts: (1) the location of existing disposal sites and locations were not based on adequate consideration of all necessary parameters for environmental, social, or political protection and (2) the disposal or treatment sites appeared to be operated and managed in an adequate manner.

A second problem was that there was not sufficient information for planning purposes as to the types of materials that were being generated as hazardous wastes within the Federal establishment. Also, the quantities and time of generation were not unknown. It was discovered that large volumes of many types of materials, particularly pesticides, were being returned from Pacific military operations to mainland United States and that large residual stocks were still on hand from World War II.

A third major need was for a listing of people and functions within the various Federal agencies who were concerned with hazardous waste management. It was felt such information would be useful in coordination of actions.

Still another concern was a lack of a catalog of facilities for treatment or disposal of these materials which already existed or were being planned and constructed by Federal agencies and an assessment of their potential for treating or receiving another agency's waste.

It was also discovered that many materials were merely "excess" to a particular agency's needs and still had a "value" to others who were currently procuring the same materials. Also, some materials had value for uses other than for that which they were originally bought for, or had value but required reconditioning. A "recycling" strategy was needed.

It was found, also, that there was a great need to share hazard waste management technology and to present new technology to the participants.

Further, but not least in importance, it appeared that a mechanism was needed to motivate local and/or State of Federal government agencies into establishing hazardous waste facilities and regulatory programs.

All of the identified problems seemed to fit within the scope of the objectives established for the Task Force.

The Executive Committee then assigned specific tasks to individuals or subcommittees as follows:

Assignment Number	Assignment	Person to whom Assigned or Committee Chairman
1	Develop a directory of agency personnel concerned with hazardous wastes in Region IX	Karl E. Kneeling, P.E., Sanitary Engineer, Navy Environmental Protection Support Service, NESO, Port Hueneme, CA.
2	Assess types and quantities of hazardous wstes in Region IX:	
	a. Department of Defense	LTC John P. Meade, USAF Director of Categorical Programs, Office of the Assistant Secretary of Defense, Health & Environment, Washington, D.C.
	b. Other Federal Agencies	Willis L. Burnham, Staff Hydrologist, U.S. Geological Survey, USDI, Menlo Park, CA.
3	Survey of Existing Federal Hazardous Waste Management Facilities	MAJ Wyatt L. McGhee, Bioenvironmental Engineer, U.S. Air Force Clinic/-SGB, McClellan AFB, CA.
4	Prepare recommendations for environmentally sound management of hazardous materials:	
	a. Develop criteria for selection of disposal sites.*	Walter S. Weaver, Sanitary Engineer, U.S. Forest Service, San Francisco, CA, Chairman of Sub-committee
	b. Develop criteria for operation and management of hazardous materials disposal and processing sites.*	Leonard Lanni, Assistant Director, Safe & Nuclear Materials Division, ERDA, San Francisco, CA, Chairman of Sub-committee

Assignment Number	Assignment	Person to Whom Assigned or Committee Chairman
c.	Design computerized recycling programs for Federal agencies:	
	(1) DOD agencies.*	Rolland M. Hamilton, Manager, Environmental Branch, Western Division, Naval Facilities Engineering Command, San Bruno, CA.
	(2) Other Federal agencies	LTC John Meade, USAF, Director, Categorical Programs, OASD, DOD, Washington, D.C. also, Chairman, GSA Interagency Task Force for Hazardous Materials Disposal
5	Actions to manage and to dispose of excess stocks of pesticides and other hazardous materials now on hand, DOD:	
	a. Pacific Islands areas*	CDR John A. Walters, CEC, USN, Special Assistant for Ecology, Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, HI.
	b. Sierra Army Depot	COL Robert C. Hawlk, Commanding Officer, Sierra Army Depot, Herlong, CA. (Successor to COL Skinner E. Anderson)
	d. DOD Pesticide Control Programs	LTC John Meade, USAF,DOD, Washington, D.C.
6	Coordinate Task Force Actions with State agencies	Executive Steering Committee
7	Task Force Final Report and Recommendations.	Charles T. Bourns, EPA, IX, San Francisco, CA.

(Note: An asterisks(*) indicates a sub-committee assignment)

There were several other needed actions which did not lend themselves to a sub-committee or individual effort. There existed a need for transfer of known information relating to the management of hazardous materials. It was decided that this need could be handled by scheduling an extra day at each whole Task Force meeting for presentation of papers as a technology transfer function. There was also a need for identifying or preparing a compendium and continuous updating of laws and regulations pertaining to hazardous materials management. It was also decided to meet these needs by presentations at Task Force meetings. How these needs were filled is shown in appended agenda for Task Force meetings.

A major problem discussed by the Executive Committee was that of identifying, developing, upgrading and otherwise securing disposal sites for use by Federal facilities. This problem seemed to be one which was beyond the capabilities of the Task Force to resolve completely within the timespan of its operation; which seemed to hinge on completion of task assigned to sub-committee action; and which involved motivation of State or Federal agencies to become involved in implementing. The decisions and actions of the Task Force and its Executive Committee on this latter problem are discussed later in this report.

While the original scope of actions were designed primarily for standard Region IX, some of the activities evolved into nationwide and international actions such as those instigated by the Department of Defense. This came about because of two reasons: the principal agency involved was not administratively organized along the standard region basis and it therefore became expedious to involve a larger geographical area or the agency, having become concerned and involved in a particular action, felt the action(s) were good for the whole agency. In fact, it was observed that the general stream of actions undertaken by agencies participating in the Task Force were reflected by changes in their own operations by paralleling the Task Force effort in their day-to-day decisions, programs, and actions which pertained to the management of hazardous materials. New agency programs to tighten management, revision of operational regulations and institution of new programs soon began to appear in several agencies. There is no way that the "spinoff" improvements in hazardous materials management which resulted directly or indirectly from the Task Force efforts can be documented, but they now exist.

Activities and accomplishments of each of the individual assignments are discussed in succeeding sections of this report.

CHAPTER 3

DIRECTORY OF FEDERAL CONTACTS ON ENVIRONMENTAL PROTECTION

Work Element for WFRC Task Force for Hazardous Materials Management:

Develop and maintain a directory of individuals within agencies who are designated for contact regarding management of hazardous materials and environmental matters.

Sub-committee Chairman:

Mr. Karl E. Kneeling
Sanitary Engineer
Navy Environmental Support Office
NCBC, Port Hueneme, CA 93043

Credit for formatting and maintaining the Directory up-to-date should go to:

Mr. Robert C. Coffin, Jr.
General Engineer
Navy Environmental Support Office
NCBC, Port Hueneme, CA 93043
Position Title: Environmental Information Coordinator

The need for a directory of persons and agencies with concerns of the environment and, in particular, the management of hazardous waste was an item of discussion at the initial meeting of the Task Force and at the first meeting of the Executive Steering Committee. At this meeting, Mr. Karl E. Kneeling, Sanitary Engineer, Navy Environmental Support Office, advised that the Navy had initiated a similar project for internal use, had already issued a first edition and was in the process of revising same for an updated edition. He suggested that it would be relatively easy to adapt and expand this ongoing effort to serve the purpose of the Task Force. He felt that such an action would likely be welcomed by the Navy since it would make the publication more comprehensive and useful to them. Mr. Kneeling volunteered to investigate the possibilities of Navy cooperation, and in any event, be responsible for this work element.

The Navy Environmental Support Office later agreed to Mr. Kneeling's suggestion and the Directory of Federal Contacts on Environmental Protection, November, 1973, was issued with the additional information to serve the purpose of the Task Force and was distributed to its members.

A revised edition, in loose-leaf format, was prepared in November, 1974, and a current update of changes was issued in January, 1976. Both revisions were distributed to Task Force Members and the Western Federal Regional Council.

This output has been very useful to all receiving the publication according to comments made at Task Force meetings and in comments to the Chairman. The Task Force is indebted to the Navy for this cooperation.

The various editions of the directory are not included in this final report except by reference because of the nature and size of the publications. The publication is available to all Federal facility personnel who have a need for it and can be obtained by a request to the Navy office shown below. Since this action is ongoing, recipients are requested to examine the current edition and advise the office whose address is shown below of corrections and changes for ensuing editions. The publication is officially known as the Directory of Federal Contacts on Environmental Protection, NESO Report No. 20.2-001, and available from Navy Environmental Protection Support Service, Navy Environmental Support Office, Naval Construction Battalion Center, Port Hueneme, CA 93043.

CHAPTER 4

REGIONAL INVENTORY OF FEDERAL HAZARDOUS WASTES

Work Element for WFRC Task Force for Hazardous Materials Management:

Develop and inventory or a quantitative assessment of hazardous materials within Region IX which are in the possession of Federal agencies and which now require disposal.

This work element was divided into three segments: (a) the problem with Department of Defense agencies (b) Non-DOD Agencies, and (c) Hawaii Sub-Zone DOD Agencies.

Sub-committee Chairman for mainland areas the Department of Defense:

LTC John P. Meade, USAF Director for Categorical Programs Office of the Assistance Secretary for Defense, Health and Environment, Washington,D.C.

Sub-committee Chairman for Non-DOD agencies:

Willis L. Burnham, Staff Hydrologist, U.S. Geological Survey, USDI, Menlo Park, CA.

Sub-committee Chairman for Hawaii Sub-Zone DOD Agencies:

CDR J.A. Walter, CEC, USN, Special Assistant for Ecology, Pacific Division, Naval Facilities Engineering Command, Makalapa, Hawaii 96610

A need was identified for quantification and location identification of these materials sufficient for planning purposes. The scope of the work required to develop this information seemed to fall into two broad sections (military and non-military agency categories) because of administrative restrictions in access to and release of information. The work element was further divided into two sub-elements assigned to the Department of

Defense and one which would include all other Federal agencies. The reports of these three working groups describe approaches to solving this problem used by each and their outputs, and are as follows:

(a) Pesticides and Other Hazardous Waste for Disposal in the Department of Defense (Department-wide in scope). (As quoted from sub-committee summary report):

"The sub-committee for the inventory and assessment of Department of Defense waste hazardous materials respectfully submits the following report. All inventory data was furnished by the Defense Supply Agency, Cameron Station.

"The purpose of the sub-committee was to identify the location, condition, and quantity of waste hazardous materials generated by DOD installations within Region IX. In order to limit the scope of the endeavor, the following definition of hazardous materials was utilized:

"Those wastes that pose a substantial danger immediately or over a period of time, to human, plant, or animal life and as such must be handled and disposal effected with special precautions.

"During the term of operation of the Task Force, the Department of Defense effected an administrative change in the assignment of responsibility for the management of hazardous materials such that the individual agencies were relieved of this responsibility and the entire management program given to the Defense Supply Agency (now, "Defense Logistics Agency" - Editors note.) This change was made for several reasons among them to provide uniform systems for management, inventory, policy, opportunities for recycling, and environmental protection. Hazardous materials in the possession of DOD agencies fall generally into four categories: (1) relatively small amounts which become for one reason or another excess to a local agency's needs. (2) relatively large quantities, of chemicals, primarily pesticides, which were gathered from diverse locations over a period of years, and which no longer have valid registration for use or have deteriorated, (3) retrograde materials being returned from Pacific areas (Vietnam, Okinawa, etc.) and (4) Herbicide "Orange". With the exception of Herbicide "Orange" most of the retrograde chemicals were returned to the Sierra Army Depot at Herlong, California for the purposes of sorting, labeling, grading, recontainering, and ultimate recycling or disposal. Because of the sheer volume and potential for environmental concerns, Herbicide Orange, storage and disposal, was handled as a separate action of the U.S. Air Force but coordinated through the Department of Defense. Sub-actions instituted to solve the above defined problems are discussed below:

"(1) Retrograde Commercial Chemicals at Sierra Army Depot: Essential facts pertaining to this stream of action, as of January 1, 1976, are as follows:

"Sierra Army Depot (SIAD) was designated in July 1972 as the receiving point for commercial chemicals being returned from the Pacific Area. Since this date, SIAD has received approximately 185 line items (1,500 tons) of retrograde commercial chemicals. Action is taken to return usable items which have a demand, to the Army supply system. All other items are transferred to local Property Disposal Office (PDO) for disposition.

"All commercial chemicals at SIAD have now been transferred to accountability of PDO except DDT. A current authorization to screen DDT and transfer it to PDO is underway. Some repacking of DDT must take place before the transfer can be accomplished.

"During the initial receipt of retrograde materials in 1972 and 1973 problems were encountered because of damaged containers being shipped and some leakage occurring. Also, some containers labeled as one chemical contained another; e.g., a drum marked Diazinon contained paint thinner or turpentine.

"In 1972 a small quantity of chemicals were buried in pits on the depot. This material was removed from the ground in May 1974 and placed in containers or overpacked with plastic and stored in Conex's on entrapment pits lined with impermeable mylar sheets. Tests were performed by Environmental Hygiene Agency (EHA) to determine leaching and other pollutants present. All tests proved negative with no indication that pollutants had reached the water supply.

"Shipments to date include:

Department of Agriculture, 17,875 gallons Malathion, June 1975.
Edgewood Arsenal, 3,300 gallons Monoethanolamine, November, 1974 and March, 1975.
USAID: Ecuador, 64,600 lbs. DDT powder, 17-18 September 1974.
Yemen, 6 drums DDT liquid, October 1974
Honduras, 32,680 lbs. DDT powder, 26 December, 1974.
Philippines, 23,750 lbs. powder, 9 January, 1975.
Additional shipments under USAID of DDT formulations should be finalized early CY 1976.

"The most recent shipment of commercial chemicals arrived SIAD 19 November 1975. Containers were in good condition and overpacked. Our next scheduled shipment is due at SIAD on or about 24 December 1975 and we should receive the remainder (approximately 1,300 tons) from Okinawa by 31 March 1976. Coordination between Military, Federal, State and Local agencies was made in September 1975 in preparation for this movement.

"Related Programs:

a. SIAD's involvement in handling and disposal of retrograde commercial chemicals has been closely coordinated with the Environmental Hygiene Agency, U.S. Army, at Edgewood Arsenal and the Solid and Hazardous Waste Management Program Office of the Environmental Protection Agency, Region IX.

b. SIAD participates as Army representative in the Federal Regional Task Force for Hazardous Materials Management, sponsored by the Western Federal Regional Council. SIAD periodically furnished the Task Force with computer listings of stocks on hand of these materials.

"(2) Large Stocks of Old Pesticides at Specific Locations in Region IX. and (3) smaller stocks of various materials at other DOD locations were inventoried by the Defense Supply Agency, Cameron Station and a printout of the computer listing of these materials was furnished to the Chairman of the Task Force as a basis of planning. The stocks on hand, of course, vary from day to day, and specific information can only be obtained by querying the computer accounting system for the day in question, but the listing does provide a basis for planning. (Management of these materials is discussed further along in this report in Chapter 9-Editor's note.).

"(3) Herbicide "Orange" is the common designation of an herbicide, composed of 50% 2-4-5-D and 50% 2-4-5-T, two commercial registered herbicides which was for formulated for use in the Vietnam conflict for defoliation of jungle areas. In the manufacture of these particular materials, a contaminant, or by-product Dioxin, an alleged teratogenic material, was included. When this situation became evident, the Administration put a "hold" on its use. At this time the USAF had a stock of approximately 2,200,000 gallons on hand. 400,000 gallons were located at Gulfport, Mississippi and 1,800,000 was shipped to Johnston Island in the Pacific for storage until arrangement could be made for its safe disposal. For several years the DOD has explored various alternatives for incineration, burial, chemical decomposition, and clean-up for eventual use. Evaluation of these various alternative investigations and the obtaining of necessary permits is now under way. A resolution to this problem is expected within 1976. In the meantime, the maintaining of these materials in safe storage is a substantive operation both at Gulfport and Johnson Island--

the latter in Region IX--is part of the inventory in this Region. (Editor's Note: All of the stocks of Herbicide Orange were destroyed on the ship, *Vulcanus*, by incineration during the summer of 1977.)

"Approximately thirty DOD installations within Region IX are listed as possessing smaller quantities of excess hazardous materials. Almost all of the material was pesticides and herbicides and these items , other than DDT, were being disposed of through contractor operations. Therefore, the inventory will vary from day to day. The inventory does, however, provide a basis for planning purposes for continued expected "loadings".

(b) Assessment of hazardous waste quantities and locations in Federal agencies other than the Department of Defense:

Action and product of this sub-committee is summarized by its Chariman as follows:

"This sub-committee was to assess the annual load and type of non-radioactive hazardous wastes produced by Federal agencies other than the Department of Defense. All agencies believed to generate or have disposal responsibility for hazardous materials responded, except one (GSA did not respond). Methods and accuracy of documentation of waste loads varied greatly among agency units, with some unable to provide quantitative reports. Narrative descriptions of operations, however, along with detailed account by most agency units suggests the assessment was reasonably complete and the indicated annual load reported was essentially correct, although probably a minimum value. The forty-three units of the twenty-six agencies responding reported more than 4,500 tons and from 250,000 to 350,000 gallons of hazardous wastes generated, with 8,000 to 10,000 containers requiring disposal. In addition to these quantities, large amounts of hazardous materials in small-volume lots are utilized annually in laboratories and in normal operations of some agencies. These yield no reportable wastes, but there is a large estimated additional container disposal load not accounted for in the reports.

"Other than the large volume of non-radioactive waste materials resulting from specialized functions of the Nevada Test Site (ERDA), the majority of wastes and containers are the result of herbicide and pesticide uses by the land-management agencies. Minor quantities of chemical wastes are developed through laboratory functions and enforcement or policy activites. The points of generation are wide spread within the Region, and disposal through commercial facilities, through return of unused materials and containers to suppliers, and modification or neutralization does not appear to be a serious problem.

"In addition to the indicated volumes and locations of waste generation, the assessment revealed a need for more detailed and precise procedures by most agencies and offices for the recording and documentation of hazardous materials handling. Such procedures, if utilized by all agencies, would most probably reveal a waste material and container load considerable greater than that indicated by the assessment.

"Procedure: The inventory was made through requesting letters sent to all non-Defense agency units in Region IX thought to maintain operations capable of generating hazardous material wastes. It did not include contractors on federal projects. The responses summarized in the attached table are believed to be reasonably representative of the waste problem within the non-Defense agencies. However, quantities estimated probably are considerably less than those actually generated.

Forty-three offices or units of the twenty-six agencies included in the assessment reported their annual hazardous material handling procedures. These units are grouped into four broad categories based on their principal organizational function, as follows:

1. Research and Development agencies
   Includes: Agricultural Research Service (USDA)
   Energy Resource and Development Administration (ERDA)
   U. S. Geological Survey (USDI)

2. Land Management agencies.
   Includes: U.S. Forest Service (USDA)
   Bureau of Land Management (USDI)
   Bureau of Reclamation (USDI)
   National Park Service (USDI)

3. Regulatory and Control agencies.
   Includes: Animal and Plant Health Inspection Services (USDA)
   U.S. Coast Guard (DOT)
   Postmaster General (USPS)
   Environmental Protection Agency (EPA)
   Bureau of Alcohol, Tobacco, and Firearms (DT)
   U.S. Customs Service

4. Human Resource agencies.
   Includes: Department of Health, Education, & Welfare (HEW)
   Department of Housing & Urban Development (HUD)
   Veterans Administration (VA)

Table 2 lists the waste quantities by type and category. As is clearly indicated, the majority of wastes are generated in the research and development agencies and the large quantities are of only a few types. However, the individual responses to the assessment also reported the acquisition and use of large quantities of several material types, with no reportable waste. From this, it must be concluded that larger volumes of waste are actually generated, and that the reported container-disposal volume is far too small. This is particularly true of the agencies of category four. Some agencies in this category maintain laboratory facilities and other functions requiring use of hazardous materials. These operations are such, however, that no reportable waste is produced and the containers are apparently disposed of as returnable to the supplier or through domestic solid-waste facilities.

The great majority of all non-Defense Department federal agency hazardous waste is generated in the normal activities of only six or the agencies, and of these one agency produces perhaps 80 percent of the total. From this it is apparent that even though many agency units have need for hazardous waste disposal facilities, the vlume involved is not large, and the majority have no real problem of management or disposal through commercial facilities.

Table 2. Types of waste hazardous materials reported by pound, gallon and number of containers by Federal agencies other than Department of Defense.

	Waste Type	Agency Category Pounds 1	2	3	TOTALS
Type 1.	Acid solution	1,750			1,750
2.	Alkaline solution	22,200			22,200
3.	Pesticides		7,218	341	7,559
4.	Paint sludge		4,986		4,986
5.	Solvent	8,075			8,075
6.	Lead sludge				0
7.	Chemical toilet wastes		20		20
8.	Tank bottom sediment				0
9.	Oil		17,600		17,600[3]
10.	Drilling mud	8,000,000			8,000,000
11.	Contaminated soil & sand	276,000	41,500		437,500
12.	Laboratory waste	2,710		281	2,991
13.	Drugs				0
14.	General	230	72,500	8	72,738[1][2][3]
	TOTALS	8,154,965[1]	378,324[2]	42,130	8,575,419

Table 2 (continued):

	Waste Type	Gallons 1	 1	 1	TOTALS
Type 1.	Acid solution	7,346	47	763	8,156
2.	Alkaline solution	513	185	208	906
3.	Pesticides	120	6,823	281	7,224
4.	Paint sludge	4,780	198	397	5,375
5.	Solvent	447	2,386	6,101	8,934
6.	Lead sludge			1	1
7.	Chemical toilet wastes		103,000		103,000
8.	Tank bottom sediment		12,000	50	12,050
9.	Oil	2,220	7,317	45,707	55,244[3/]
10.	Dilling mud				0
11.	Contaminated soil & sand				0
12.	Laboratory waste	74	3	672	749
13.	Drugs				0
14.	General	331	8,400	3	8,734[1/2]
	TOTALS	15,381	140,359	54,183	210,373
Containers		338	7,580	100	8,018

Footnotes:

1. Agencies in category 1 report in addition to quantities shown, the following:

Type 12--Trace quantities of 135 chemicals, the use of which does not create reportable waste quantities.

Type 14--66 large sheets and 20 large rolls of asbestos.
110,000 gallons of spent epoxy, catalyst, and resin.
Approximately one million pounds of lead; as shot, sheets, and bricks.

2. Agencies of category 2 report, in addition to that shown, large quantities of Type 3 materials in small and large lots, but no waste. Additional large gallonage of waste and a large quantity of containers must be assumed disposal.

3. One agency reported 2,500,000 gallons of gasoline as waste. This is considered a one-time disposal and not included as an annual quantity estimate.

(c) Assessment of hazardous waste quantities and locations in the Department of Defense agencies in the Hawaii Island area:

The report of the sub-zone group study was as follows:

"Summary

"Actions of the DOD Task Force in Hawaii for Hazardous Waste Management.

"A Study of the Disposal of Hazardous/Toxic Waste Materials at Military Installation, Honolulu, Hawaii, April 1975" was the result of a one-time sub-group formed in February 1974 under the Chairmanship of CDR J. A. Walter as part of the Hawaii Area Overseas Coordination Group. This study group considered its objectives to be (1) conduct an inventory of hazardous/toxic waste materials from military intallations on Oahu, (2) identify the specific problem areas, and (3) recommend disposal methods or further study areas where acceptable disposal methods/facilities are not available.

"The five basic steps in conduct of this study were Data Evaluation, Interpretation of Results, General Performance, Findings by Services, and Discussion on Correction. In Hawaii there are five supervisory bodies with a total of fifteen facilities, not counting local civilian facilities or sewage treatment plants. One-third of these are Navy-administered.

"The concluding recommendation was that new/modified procedures/managerial systems be instituted to assure that each service increase its efforts to maintain an effective surveillance and enforcement system to eliminate practices contrary to regulations, especially regarding any discharge into sewers and unacceptable disposal practices on land. Each service should fully utilize the existing facilities by adequate notification to waste dischargers of available services. All services should make maximum utilization by Inter-Service

Support Agreement (ISSA) of industrial waste treatment plant, existing specialized treatment facilities and services. Where facilities are not available, wastes should be properly stored until a feasible solution is available. Each service should institute an educational awareness program for its personnel. Finally, all services should cooperate together in regional efforts to find better solutions to the disposal of hazardous/toxic wastes."

Actions of the DOD Task Force in Hawaii for Hazardous Waste Management

The Project:

"Priority of attention in pollution abatement matters has usually started with water, air, and noise pollution, and then recognized solid wastes of the more obvious types, overlooking for a time the hazards and toxicity of certain waste materials. This is an important area of study requiring increased attention because proper disposal of these materials is becoming increasingly difficult to cope with.

"While there has been Federal legislation regulating the disposal of hazardous/toxic wastes in the atmosphere and surface waters, there is no legislation pertaining to land disposal. A recent inventory on Oahu, where Honlulu is located, and where most of Hawaii's urban population lives, shows that a sizeable amount and variety of hazardous/toxic wastes are generated. The current production by naval activities exceeds the total combined output of the other military components.

"The establishment of the DOD study group was in keeping with more stringent pollution standards and the greater awareness of the hazards and toxicity of waste materials, as well as a greater priority for action in this study area. The Hawaii Area Overseas Coordination Group appointed a one-time sub-group in February 1974 to study the matter, and I was asked to assume the Chairmanship. Our report was published later in April 1975, and I have in my hand a copy of "A Study of the Disposal of Hazardous/Toxic Waste Materials at Military Installations, Honolulu, Hawaii."

"This study was an attempt to be comprehensive in scope and to examine those wastes that could be handled by existing facilities through joint cooperation and to pinpoint suggested areas for future investigation. The methodology involved in the report will be of interest to those undertaking similar projects, answering such questions as how large the Task Force should be, how much time is allotted for report completion, the extent of staff support, and the limitations of such an undertaking.

"The problem/objectives can be briefly stated, first, the technology for controlling hazardous wastes disposal does exist for most substances. The second problem is that adequate facilities are not always available and, when they are available, adequate treatment and disposal are much more expansive than environmentally unacceptable methods. A third problem is the lack of awareness or the unconcerned attitude of persons disposing of these wastes in unacceptable methods. The study group determined their objectives to be as follows: (1) conduct an inventory of hazardous/toxic waste materials from military installations on Oahu, (2) identify the specific problem area, (3) recommend disposal methods or further study areas where acceptable disposal methods/facilities are not available.

"One specific result was to recommend that a new managerial scheme be established to deal with wastes currently lacking in proper treatment and disposal. Specifically, inter-military sharing of facilities by Inter-Service Support Agreements (ISSA) should be increased to augment disposal efficiency.

"This report has been a definitive study--definitive in the sense that it was the first of its kind in Hawaii and one which will probably not be repeated again for some time. Like any study, it is dated from the time of publication and represents the best effort of a given number of persons on a limited subject within the constraints of time, money, energy, and staff support. Radio-active wastes were not included in this report.

"Hazardous/toxic wastes can be simply defined as those wastes which cannot or should not be handled or disposed of in the same manner as the installation's normal solid waste load and therefore require special handling, pre-treatment and/or a specific disposal process. These are usually categorized as: chemical, flammable, explosive, biological, and radioactive, taking the forms of solids, sludges, liquids, or gases. How do you determine whether a waste is hazardous or toxic? It is usually based on a judgment that a significant potential exists for causing adverse public health or environmental impact if handled as ordinary wastes.

"The current major methods of handling and disposing of hazardous/toxic waste materials which are generated within the Armed Forces are comprised of reclamation, pre-treatment, incineration, demolition, and landfill. Each military establishment coordinates its own responsibilities to formulate policies and procedures through a focal point whch either provides guidance or acts as a directorate in the management of these waste materials.

"In Hawaii therea are 5 supervisory bodies with a total of 15 facilities, not counting local civilian facilities or sewage treatment plants. One-third of these are Navy-administered:

1. Industrial Waste Treatment Plant (Public Works Center, P.H.) for acids, alkalies, cyanide, and chromium wastes.

2. Oil Reclamation Facility (Naval Supply Center, P.H.) for uncontaminated oil with high flash point, but not for solvents or oil contaminated solvents.

3. Rotary Kiln Incinerator (Public Works Center, P.H.) for oil sludges and solvents, now under construction.

4. Pearl City Tri-Service Sanitary Landfill, only for pre-stabilized hazardous/toxic wastes.

5. Silver Reclamation Process or Facility, for film and developing papers.

6. Torpedo MK 48 Solid Waste Incineration (Naval Magazine, Oahu, West Loch Branch) for solid wastes such as otto fuel contaminated, generated by the MK 48 Torpedo Program.

"The Air Force administers 3 facilities:

1. Oil Separation Plant No. 1, for removal of free floating oil from washrack effluent.

2. Oil Separation Plant No. 2, for removal of emulsified and free floating oil from wastewater, aircraft washrack, car wash, and vehicle maintenance shops.

3. 548 RTG Silver Recovery Unit, provides removal of silver from photographic fixer solution.

"The Army has 4 facilities, mostly at Schofield Barracks Military Reservation:

1. Pathological Waste Incinerator.

2. Makua Valley Demolition Site (For Ammunition).

3. Sanitary Landfill, Only for Pre-Stabilized Hazardous/Toxic Wastes.

4. Waste Petroleum Products (POL).

"The U.S. Marine Corps administers the Kaneohe Sanitary Landfill for pre-stabilized wastes, and the Defense Supply Agency is for recycleable/excess products for resale.

"In summary form, several steps are involved in the general performance of hazardous/toxic wastes handling and disposal which is presently undertaken by the military activities stationed on the island of Oahu. These steps are data evaluation, interpretation of results, general performance, findings by services, and discussion on correction. These steps are discussed below.

"The first step was to obtain a general survey of the types and quantities of wastes and an overview of the present treatment or disposal methods. Accuracy largely depended upon personnel filing the inventory forms. Annual disposal quantities of the materials reported are mostly derived from interpolation and estimation rather than extraction from records. The assumption is made that waste materials reported as being shipped to a suitable place for disposal are properly disposed of. Offshore generation of wastes from naval ships that are disposed onshore are reported, but there is little distinction regarding the origin. Generally, speaking, the inventory is satisfactory, for it establishes a definite feedback process between the management and the operational activities.

"The second step was a case-by-case evaluation of the adequacy in treatment and disposal, with general rules determining adequacy being: (1) reclamation or recycle, (2) no discharge into storm drains, (3) discharge into sanitary sewer with/without pretreatment depending on the specific category of waste, (4) ground or landfill disposal with/without pretreatment. Also depending on the type of waste, (5) amenable to incineration, (6) shipment to a suitable place.

"Acids and caustics, alkalies, petroleum products, chromium wastes, and others could generally be determined with great confidence regarding the appropriateness of their final disposal modes. However, many types of wastes found with categories pertaining to photographic/printing solutions, organic materials, and miscellaneous items have great variations in their toxic and hazardous characteristics.

"The third step was consideration of general performance, in light of present status of federal, state, and local legislation, the current military practices vary in compliance with standards. The bulk of the reported wastes (by quantity) are petroleum products, detergents, photographic/printing solutions, acids and caustics, solvents, and finally, alkalies. Other categories were small by comparison. A chart is provided to analyze category, volume, and disposal adequacy for each.

"The fourth step was findings by services, noting the significant difference existing in the volume of waste produced. For example, the Marine Corps volume is minute compared to wastes generated by Navy, but the difference in volume does not influence the efficiencies of proper waste disposal. First, take Navy from which petroleum products account for the largest single category of wastes reported (over 6,300,000 gallons annually). The Naval Supply Center, Pearl Harbor, oil reclamation/recycling facility and private contract services handle this disposal. Such recycling can be an economic asset. The Navy operates an industrial waste treatment plant for acids, alkalies, cyanide, and chromium wastes, not fully utilized, to be discussed in my next talk. The discharge of solvents into storm drains was a reported practice at certain naval activities. The disposal of infectious medical waste (pathological wastes) relies exclusively on landfill. This method of disposal is acceptable provided the wastes are first subjected to sterilization, incineration or rendered safe prior to landfill disposal.

"The Army reported disposal modes for petroleum products, infectious medical wastes and explosives as generally adequate, but small quantities of acids and alkalies are reported to have been discharged into storm and sanitary sewers and should be redirected to the Navy plant.

"Photographic and infectious medical wastes make up the largest volume of wastes generated by the Air Force, which has begun enforcement or prescribed pre-treatment methods for photographic chemicals including: (1) recovery of silver from fixer solutions, (2) adequate diultion of the remaining photochemicals. Six thousand units of bacteriological culture wastes were repoted by the Air Force as part of its biological and pathological waste category. These are sterilized prior to leaving the facility.

"According to reported quantities, the Marine Corps presently generates the smallest volume of wastes, of which infectious medical wastes constituted the largest category. 1,630,000 gallons of reported consists of steam plant blowdown, pool filter backwash, and engine test.

"The fifth basic step in the study involves correction, where practices are in violation of policy, regulations, or standards, involving: (1) wastes which only require procedural changes from their present means of handling and disposal. (2) wastes which require further study and investigation for their proper management and (3) wastes that are currently unmanageable locally.

"Conclusions and Recommendations

"Federal legislation regulates the disposal of these wastes in the atmosphere and surface waters but not on land. The inventory revealed that a sizeable amount and variety of these wastes are generated by the military on Oahu, of which more than 90 percent occurs in liquid form. Although treatment facilities do exist, many activities were discharging these wastes into storm and sanitary sewers and elsewhere in violation of environmental regulations. Many of these violations can be attributed to a lack of environmental awareness and a lack of aggressive management and personnel actions. Much of the wastes identified as inadequately disposed can be properly disposed of by only procedural changes. There remains a small list of wastes which currently remain unmanageable locally and require interim storage or shipment off-island for disposal. Disposal of the majority of hazardous/toxic wastes is accomplished by each service. However, there is currently no Class I landfill on Oahu and the establishment of such a landfill for disposal of these wastes does not appear feasible without full inter-governmental cooperation. A continuing effort is needed to identify inadequate disposal practices and to provide disposal facilities/services.

"The recommendation is that new/modified procedures/managerial systems be instituted to assure that each service increase its efforts to maintain an effective surveillance and enforcement system to eliminate practices contrary to regulations, especially regarding discharge into sewers and unacceptable disposal practices on land. Each services should make maximum utilization by interservice support agreement (ISSA) of industrial waste treatment plant, existing specialized treatment facilities and services. Where facilities are not available, wastes should be properly stored until a feasible solution is available. Each service should institute an educational awareness program for its personnel. Finally, all services should cooperate together in regional efforts to find better solutions to the disposal of hazardous/toxic wastes.

In conclusion, this has been a unique undertaking, for which there are still to be many questions to be answered."

(Editor's note: This sub-committee designed a computer program with appropriate forms for data gathering for this inventory which proved to be an effective and efficient management tool. A detailed and a summary report of results was provided to participant military agencies, to the Department of Health of Hawaii, and to the Environmental Protection Agency. Actual data or summaries however, were not included in this report because of a command decision to require formal clearance from the Department of Defense before publication. This clearance was not forthcoming in time for this Task Force Report. Results, however, have since been included and published in summary form in a report. "Hazardous Waste Management Problem Assessment and Strategy Formulation in the Pacific Area" by Garretson, Elmendorf, Zinov and Reibin, Architects and Engineers, San Francisco, April 1978. Copies of the latter report are available from the Environmental Protection Agency, Region IX, San Francisco, California or the Hawaii State Department of Health, Environmental Health Division, Honolulu, HI.)

CHAPTER 5

SURVEY OF EXISTING FEDERAL HAZARDOUS WASTE MANAGEMENT FACILITIES

WORK ELEMENT FOR WFRC TASK FORCE FOR HAZARDOUS MATERIALS MANAGEMENT:

CONDUCT SURVEY OF EXISTING HAZARDOUS WASTE MANAGEMENT FACILITIES.

SUBCOMMITTEE CHAIRMAN:
Wyatt L. McGhee, Maj, USAF, BSC
Chief, Bioenvironmental Engineering Services
USAF Clinic, McClellan AFB, CA 95652

Survey of Existing Federal Hazardous Waste Management Facilities

1. INTRODUCTION AND PURPOSE:

One of the objectives of the WFRC Task Force for Hazardous Materials Management was to identify, develop, and disseminate recommended plans of action for environmentally safe management of hazardous materials. In developing plans of action, a survey of existing capabilities for hazardous waste management facilities was needed, since such facilities may well play a role in any future plans of action. Where these facilities already exist with spare capabilities for treatment and recovery or disposal, the proposed strategy provides for cooperative arrangements for local solutions to Federal agency hazardous waste problems.

2. PROCEDURE:

To obtain information on existing capabilities, a slide presentation was given at the annual meeting of the Task Force in Reno, Nevada, 3 - 4 Dec 75, showing the types of information needed. Each Task Force member was given a handout (see Attachment 5-1) and was requested to report on any hazardous waste disposal or treatment capability which existed at the member's facility, using the format provided. In addition, letter requests were mailed to 20 federal agency representatives and to Bioenvironmental Engineers at 16 Air Force Bases within Region IX. The information was requested to be provided on a voluntary basis.

3. FINDINGS:

Only four positive responses were received reporting some limited capability for disposal or reclamation of hazardous wastes. These were received from:

Energy Research and Development Administration (San Francisco), (See Atch 5-2).
Naval Facilities Engineering Command (Pearl Harbor), (See Atch 5-3)
Sierra Army Deport (Herlong, CA), (See Atch 5-4)

Eleven negative responses reporting no capability were received from:

Bureau of Land Management - Arizona
Bureau of Land Management - Nevada
Agricultural Research Service, Western Region
U.S. Geological Survey
U.S. Environmental Protection Agency, Region IX
Vandenberg Air Force Base
Travis Air Force Base
George Air Force Base
Edwards Air Force Base
U.S. Coast Guard - 12th District
U.S. Army Corps of Engineers - South Pacific Division

4. DISCUSSION:

As shown, few hazardous waste disposal capabilities were reported in Region IX; and informal discussion reveals that commanders and plant managers are reluctant to reveal capabilities to receive hazardous wastes from others for disposal. Although other capabilities are known to exist in the Region, an official directed survey with formal reporting requirements on specific categories of waste treatment capabilities would be necessary for this information to be identified. A voluntary survey of the type performed evidently does not achieve the desired response, although interest is certainly evident among those who would use hazardous waste disposal facilities. The existence of a cooperative disposal scheme or provision for reimbursement of expenses would perhaps solicit a larger response.

SAMPLE FORMAT

ATTACHMENT 5-1

HAZARDOUS MATERIAL DISPOSAL CAPABILITIES, REGION IX

FACILITY NAME: McClellan AFB, CA

INDIVIDUAL TO CONTACT/OFFICE SYMBOL: Nelson Chardoul/DEO

TELEPHONE (COMMERCIAL)(916)643-5004 (AUTOVON) 633-5004

MATERIAL	DISPOSAL CAPABILITY AND RESTRICTIONS
Metallic Mercury	Contaminated liquid mercury is reclaimed through chemical reprocessing in the Mercury Reclamation Unit, Bldg 368.
Acids	Miscellaneous acids can be used for pH adjustment in the Industrial Waste Treatment Plant (IWTP), Bldg 714. Containers must be in good condition to allow for outside storage.
Cyanide Wastes	A maximum of _____#/day can be treated in the IWTP, Bldg 714. Treatment costs of approximately $_____/gal must be reimbursed.
Chrome Wastes	A maximum of _____#/day can be treated in the IWTP, Bldg 714. Treatment costs of approximately $_____/gal must be reimbursed.

NOTE: This listing to be developed is intended to inform persons charged with hazardous waste disposal within Region IX of locations where present capabilities exist for proper disposal of specific materials through treatment, neutralization, reclamation, etc. Each task force member is requested to submit a brief listing of those materials for which adequate disposal capability exists, showing any restrictions which would be necessary in accepting materials from other facilities. Information submitted for this listing will be of great practical value in developing a mutual cooperative effort for hazardous waste disposal in Region IX, while recovery and disposal capabilities are further developed in the future.

Submit inputs in the format shown above as early as possible but to arrive not later than 27 Feb 1976. Send to:

Maj Wyatt L. McGhee
Chief, Bioenvironmental Engineering Svcs
USAF Clinic, McClellan/SGB
McClellan AFB, CA 95652

Copies of the completed listing will be mailed to each task force member. Individuals must then make their own appropriate inquiries to determine whether disposal at the listed facility can be arranged. Arrangements would include: transportation and handling, use of proper containers, limits on quantities acceptable, reimbursement for treatment costs, etc. In all cases, the product to be disposed must be fully and accurately described to the satisfaction of the facility contact listed, to assure that proper treatment capability exists.

ATTACHMENT 5-2

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
SAN FRANCISCO OPERATIONS OFFICE
1333 BROADWAY
OAKLAND, CALIFORNIA 94612

F:MHS 10-8

MAR 3 1976

Major Wyatt L. McGhee, Chief
Bioenvironmental Engineering Services
USAF Clinic, McClellen/SGB
McClellen Air Force Base, CA. 95652

Dear Wyatt:

With reference to your letter of January 9, 1976,"Hazardous Material Disposal Capabilities" of possible interest to you and existing at our contractor sites in Region IX are as follows:

A. Atomics International Division
Rockwell International
8900 DeSoto Avenue
Canoga Park, California 91304

Material	Disposal Capability & Restrictions
Combustible material including hazardous organic chemicals, pesticides, herbicides, etc.	1) Molten Salt Incinerator unit accepting approximately 2 lb/hr. Complete, non-polluting oxidation occurs in a non-toxic salt. Material must be suitable for shredding or for feeding through about a 1 in. diameter line. Material is converted to innocuous salt. Location: Bldg. 4, 8900 DeSoto Ave., Canoga Park. Costs are dependent on the amount of material.
	2) Molten Salt Incinerator unit accepting 100 lb/hr of material. Location: Bldg. 5, Rockwell preserve in Santa Susana mountains.

Material	Disposal Capability & Restrictions
Plating wastewaters and other water containing soluble forms of heavy metals and/or cyanides.	Electrolytic treatment in AI's Particle Bed Electrode (PBE) Cell will directly remove most heavy metals* and oxidize cyanide ions. Per pass removal in range of 60 to 80% at 0.5 gpm flow. Acceptable pH range about 4 to 12. Disposal charges to be negotiated. Located in Bldg. 4, 8900 DeSoto Ave., Canoga Park, CA.

---

*Chromate removal by reduction, hydrolysis, and filtration.

B. Lawrence Livermore Laboratory (LLL)
Post Office Box 808
Livermore, California 94550

At LLL, unique disposal capability that is available consists of treatment of radioactive waste. LLL has facilities for removing radioactive contamination from equipment, decontaminating radioactive waste water, and preparing contaminated waste for off-site burial. Outside requests for these disposal services would have to be negotiated on an individual basis, and all aspects of such cases would have to comply with the regulations in CFR Titles 10 and 49.

While the information is not in the format requested, I considered it advisable to forward in this manner rather than further delaying the action. My apologies for being late.

Sincerely,

Len Lanni

Len Lanni
Program Coordinator
Environment and Safety Division

ATTACHMENT 5-3

DEPARTMENT OF THE NAVY
PACIFIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
MAKALAPA, HI
FPO SAN FRANCISCO 96610

114:EL:mm
Ser 8234

24 DEC 1975

Major Wyatt L. McGhee
Chief, Bioenvironmental
Engineering Services
USAF Clinic, McClellan/SGB
McClellan AFB, CA 95652

Dear Major McGhee:

Enclosure (1), inventory of the Navy facilities for hazardous material disposal at Pearl Harbor, is submitted in accordance with your request during the annual meeting of Western Federal Regional Council Task Force for Hazardous Materials Management.

If I can be of further assistance, please contact me.

Very truly yours,

J. A. WALTER
CDR, CEC, USN
Special Assistant for Ecology

Encl:
(1) Hazardous Material Disposal Capabilities,
Region IX, Navy Activities, Pearl Harbor,
Hawaii

HAZARDOUS MATERIAL DISPOSAL CAPABILITIES, REGION IX

FACILITY NAME: NAVY ACTIVITIES, PEARL HARBOR, HAWAII

NAVY FACILITIES	WASTE ACCOMODATION	RESTRICTIONS	CAPACITY (MAX/DAY)	TREATMENT COST	ADDRESS
Industrial Treatment Plant	Acids Alkalies Cyanide Chromium	None	4,000 Gal. 4,000 Gal. 400 Gal. 2,000 Gal.	$ 0.25/Gal. $ 0.25/Gal. $ 0.25/Gal. $ 0.25/Gal.	PWC Pearl FPO San-Francisco 96610
Oil Reclamation Facility	Waste oil	Solvent & oil contaminated solvent	150,000 Gal.	No charge	NSC Pearl FPO San-Francisco 96610
Silver Reclamation Process	Fixer solution	Non-Fixer solution	12 Gal.		Photo-Lab Makalapa Fleet Intelligence Center
Silver Reclamation Incinerator	Paper & plastic containing silver	Liquid solution	600 Lbs	$ 0.05/Lb	PWC Pearl FPO San-Francisco 96610
Rotary Kiln (*) Incinerator	Oil sludges & solvents	None	1,800 Gal.	Not established	PWC Pearl FPO San-Francisco 96610

(*) Facility under construction. Operation is scheduled for April, 1976

ATTACHMENT 5-4

HAZARDOUS MATERIAL DISPOSAL CAPABILITIES, REGION IX

FACILITY NAME: SIERRA ARMY DEPOT, CALIFORNIA

INDIVIDUAL TO CONTACT/OFFICE SYMBOL: CPT JOHN HARRIS/DSS

TELEPHONE: (COMMERCIAL) 916-827-9433 (AUTOVON) 830-9433

MATERIAL	DISPOSAL CAPABILITY AND RESTRICTIONS
Explosives	Misc explosives can be blown in demolition pits up to 10,000 lbs explosive wt. per blow.*
Biological, Medical wastes	Health Clinic has small capacity incinerator. Limited to local use.
Commercial Chemicals (6800 NSN)	STORAGE ONLY, Emergency repacking capability.**

* Use by other services is accomplished by inter-service contract agreement; also use by other Federal agencies, i.e., Forest Service has been done by contract reimbursable to Depot.

** Temporary storage only of Department of Army surplus stock.

ATTACHMENT 5-5

HAZARDOUS MATERIAL DISPOSAL CAPABILITIES, REGION IX

FACILITY NAME: McClellan AFB, CA

INDIVIDUAL TO CONTACT/OFFICE SYMBOL: Nelson Chardoul/DEO

TELEPHONE (COMMERCIAL) (916)643-5004 (AUTOVON)633-5004

MATERIAL	DISPOSAL CAPABILITY AND RESTRICTIONS
Metallic Mercury	Contaminated liquid mercury is reclaimed through triple distillation in the Mercury Reclamation Unit, Bldg 368.
Acids	Miscellaneous acids can be used for pH adjustment in the Industrial Waste Treatment Plant (IWTP), Bldg 714. Containers must be in good condition to allow for outside storage.
Cyanide Wastes	Liquid cyanide wastes can be treated in the IWTP, Bldg 714. Treatment cost must be reimbursed.
Chrome Wastes	Liquid chrome wastes can be treated in the IWTP Bldg 714. Treatment costs must be reimbursed.

CHAPTER 6

CRITERIA FOR SELECTING A SITE FOR THE LAND DISPOSAL OF HAZARDOUS WASTES

WORK ELEMENT FOR THE WFRC TASK FORCE FOR HAZARDOUS MATERIALS MANAGEMENT:

DEVELOP CRITERIA FOR SELECTING A SITE FOR THE LAND DISPOSAL OF HAZARDOUS WASTES.

SUB-COMMITTEE CHAIRMAN:

Walter S. Weaver
Sanitary Engineer
USDA Forest Service
California Region
630 Sansome Street
San Francisco, CA 94111

CHAPTER 6

CRITERIA FOR SELECTING A SITE FOR THE LAND DISPOSAL OF HAZARDOUS WASTES

Develop criteria for selecting a site for the land disposal of hazardous wastes.

This work element was assigned as a sub-committee effort. Its report was prepared in a format such that it could be separated from the body of the Task Force Final Report and used by member agencies as a part of their own internal regulations or operating manuals. The following constitutes the unedited report of this sub-committee:

(Editor's Note: Following enactment of Public Law 94-580, October 21, 1977, by the Congress, the Environmental Protection Agency will be preparing regulations and guidelines covering the general area of this report.)

CHAPTER 6

CRITERIA FOR SELECTING A SITE FOR THE LAND DISPOSAL OF HAZARDOUS WASTES

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.204 Site Operation

.300 Description and Application of Site Screening Factors

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.302 Biological (Ecological) Element

.303 Land Use/Status Element

.304 Socio-Economic Element

.400 Recommended Bibliography

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CRITERIA FOR SELECTING A SITE FOR THE LAND DISPOSAL OF HAZARDOUS WASTE

ABSTRACT

Large volumes of chemical residuals and process byproducts are found in the Federal establishment that are irreducible and environmentally hazardous. Presently, the only logical disposal is land burial. The sites now available for disposal in Region IX have evolved as hazardous waste sites over the past 25 years because of their proximity to waste generators, and were not selected for long-term environmnetal safety. A few sites must be selected that will serve for ultimate disposal in perpetuity.

A Screening/Selection Process for disposal site selection has been developed by the Site Selection Criteria Subcommittee based upon successive site rejection through the proposal, screening, selection, and on-going site evaluation phases. Four basic elements describe a potential site; hydrogeologic, biological, land use and status, and socio-economic. A selection procedure was developed for site evaluation. There are a number of factors that must be analyzed under each element in each of three levels of investigation; office review, field reconnaissance, and detailed site study. The factors primarily describe the geographical setting of the desert southwest and would have to be modified for use elsewhere. The selection process on the other hand has universal applicability.

These criteria provide guidance for responsible Federal officials to help select a site specifically for Federal wastes, to evaluate a site proposed by a commercial proponent to which Federal waste would be taken, or evaluate the environmnetal safety of an existing site.

ACKNOWLEDGMENTS

Chairman: Walter S. Weaver
Sanitary Engineer
USDA Forest Service
California Region

The "Criteria" is the product of the considerable experience of the following specialists, who selflessly contributed their time and their energy to write the "Criteria:"

Will Burnham
Hydrologist
USDI Geological Survey
Menlo Park, Calif.

L. Edward Horton
Ecologist
USDA Forest Service
California Region

G. Lewis Meyer
Geologist
EPA Radiation Programs
Washington, D. C.

Stuart Porter
Watershed Specialist
USDI Bureau of Land Management
California

Robert Scott
Hydrologist
EPA Water Supply Program
Region IX

The following persons who acted as a steering committee to define the scope of the Subcommittee's work, develop the screening and selection process, and provide helpful criticism during the writing of the "Criteria":

Myron Al[illegible].)
Planning [illegible]ator
USDI Bureau of Land Management
Arizona

Kenneth Boll
Civil Engineer
USDA Forest Service
Southwestern Region

David Fishel
Industrial Hygienist
ERDA - Nevada Operations Office

Stuart Porter
Watershed Specialist
USDI Bureau of Land Management
California

Thomas George
Civil Engineer
USDA Forest Service
Intermountain Region

Raymond Jorgensen
Environmental Coordinator
USDI Bureau of Land Management
Nevada

G. Lewis Meyer
Geologist
EPA Radiation Programs
Washington, D. C.

The Task Force acknowledges the support given these members by their respective Agencies and supervisors. The various Agencies have perservered through what sometimes appeared to be an interminable task.

Special accolades are directed to: Mrs. Sadie Johnson, Clerk-Typist, USDA Forest Service, California Region, for her skillful interpretation of bad penmanship, and for putting up with the continual redrafting of the "Criteria", and Mrs. Charles Bourns who graciously accepted the task of copy editing the final draft of the Criteria. Her only relationship to this Task Force activity is an emotional one.

CRITERIA FOR SELECTING A SITE FOR THE LAND DISPOSAL OF HAZARDOUS WASTES

.100 Introduction

.101 Scope

.101-1 Authority

These criteria were developed as an assigned task of the Site Selection Criteria Subcommittee, an entity of the Western Federal Regional Council's Task Force for Hazardous Materials Management.

.101-2 Region IX

The mechanism and guidelines herein for the selection of sites for the disposal of hazardous materials are for the use of all Federal agencies in Standard Federal Region IX that use or generate hazardous materials. It is not necessarily implied that sites selected will be for the sole use of the Federal Government.

.101-3 Hazardous Waste

"Hazardous waste" means any waste material or mixture of wastes that is toxic, pathogenic, corrosive, flammable, an irritant, a strong sensitizer, or which generates pressure through decomposition, heat, or other means. In addition, these wastes or mixtures of wastes can cause substantial personal injury, serious illness or harm to man or wildlife, during or as a proximate result of any disposal of such waste or mixture of wastes. The terms "toxic," "corrosive," "flammable," "irritant," and "strong sensitizers" shall be given the same meaning as in the Code of Federal Regulations, Title 16, Chapter II. However, these criteria do not apply to Class A explosives or radioactive materials (except for low specific activity radioactive) as defined in the Code of Federal Regulations, Title 49. (The definition from S.2150 may be substituted).

.101-4 Disposal

There will certainly be some irreducible portion of many processes that are considered a waste (1) by virtue of their environmental danger, (2) their resistance to being effectively changed to an innocuous state, or (3) all reuse or recycling potential has been exhausted. Therefore, disposal is the only alternative remaining.

The management of the site, as a waste disposal site, will be in perpetuity because of the extreme persistence of the materials handled. Once interred, the wastes are considered to have been disposed of. Retrievability, although possible, was not really considered herein, but is in the Guidelines for Site

Operation.[1] It is believed, however, that any site qualifying as a disposal site under these criteria would also quality as a site for the temporary storage and processing of hazardous wastes.

.101-5 Federal Wastes

The site(s) selected shall be the preferred disposal site(s) for all excess hazardous materials, residues developed through use of hazardous materials, their containers, and all process wastes generated by direct action of the various Federal agencies or their contractors.

.102 Purpose of the Selection Criteria

.102-1 Protect Environment

These guidelines are developed to facilitate the selection of a site whose natural characteristics will reduce the possibility of the release of hazardous substances disposed of therein in quantities harmful to man and the environment.

.102-2 Guidance to Responsible Officials

These Criteria are for the use of Federal agencies and may serve as guidance to other agencies or persons. They should not be confused with the "Guidelines" developed and promulgated under the authority of the Solid Waste Disposal Act (42 U.S.C. 3251) by the Environmental Protection Agency.

Site Selection Guidelines are being developed by the Hazardous Waste Management Division (EPA) and will probably be promulgated as "Guidelines", either supplementing or superseding this Chapter.

.102-3 Supplements National Environmental Policy Act

The intensity of investigations required by these guidelines will provide the background data for subsequent environmental analyses and Statements. The disposal of Federal hazardous waste at existing sites will be a significant Federal action with environmental impacts, which will be discussed through a complete environmental analysis, and subsequent Environmental Statements for new sites. Therefore, this screening and selection process is not intended to be nearly as detailed regarding socio-economic impacts as is called for in NEPA (42 U.S.C. 4321). Using these guidelines, existing sites may be screened before use for "environmental safety."

.103 Assumptions

.103-1 The problem exists

All Federal agencies which generate or use hazardous materials are finding that the locations available for disposal of surplus supplies, of by-products or residues, and of containers are becoming less available because of limitations and problems at existing authorized sites.

---

[1] Guidelines for operation and management of hazardous waste disposal sites - Task Force Report Chapter.

.103-2 Disposal site in public domain

Either Federal or State owned or acquired lands will be utilized to insure control of ownership in perpetuity. "Private ownership" - even with so-called "perpetuity insurance (funds)" does not provide an adequate guarantee for future monitoring and action should the private owner move.

.103-3 Proposals for locating specific sites will be made by an advocate:

(a) Waste owner or landowner, Federal Government, State or County agency,

(b) Commercial operator or Federal agency operator.

.103-4 Users

The Criteria are intended to be used by many different technical specialists, their number and their mix being dictated by the intensity of the screening process applied to the site investigation. The screening agency should assure itself of the competence of assigned specialists to perform the various complex hydrologic, geologic, and biologic engineering and land management assessments.

.103-5 Factors and ratings are subject to modifications during use.

(a) The Criteria are designed specifically for use in the States of Arizona, California and Nevada, Federal Region IX, and may have to be revised for use elsewhere.

(b) The procedures for implementing an analysis will be prepared by the agency (Lead Agency) having ultimate jurisdiction. This will probably require an interagency team organization.

(c) The Criteria may have to be modified to fulfill the needs of the team using it.

.200 The Site Selection Process

A flow chart of the Process is shown in Figure 1.

Figure 1

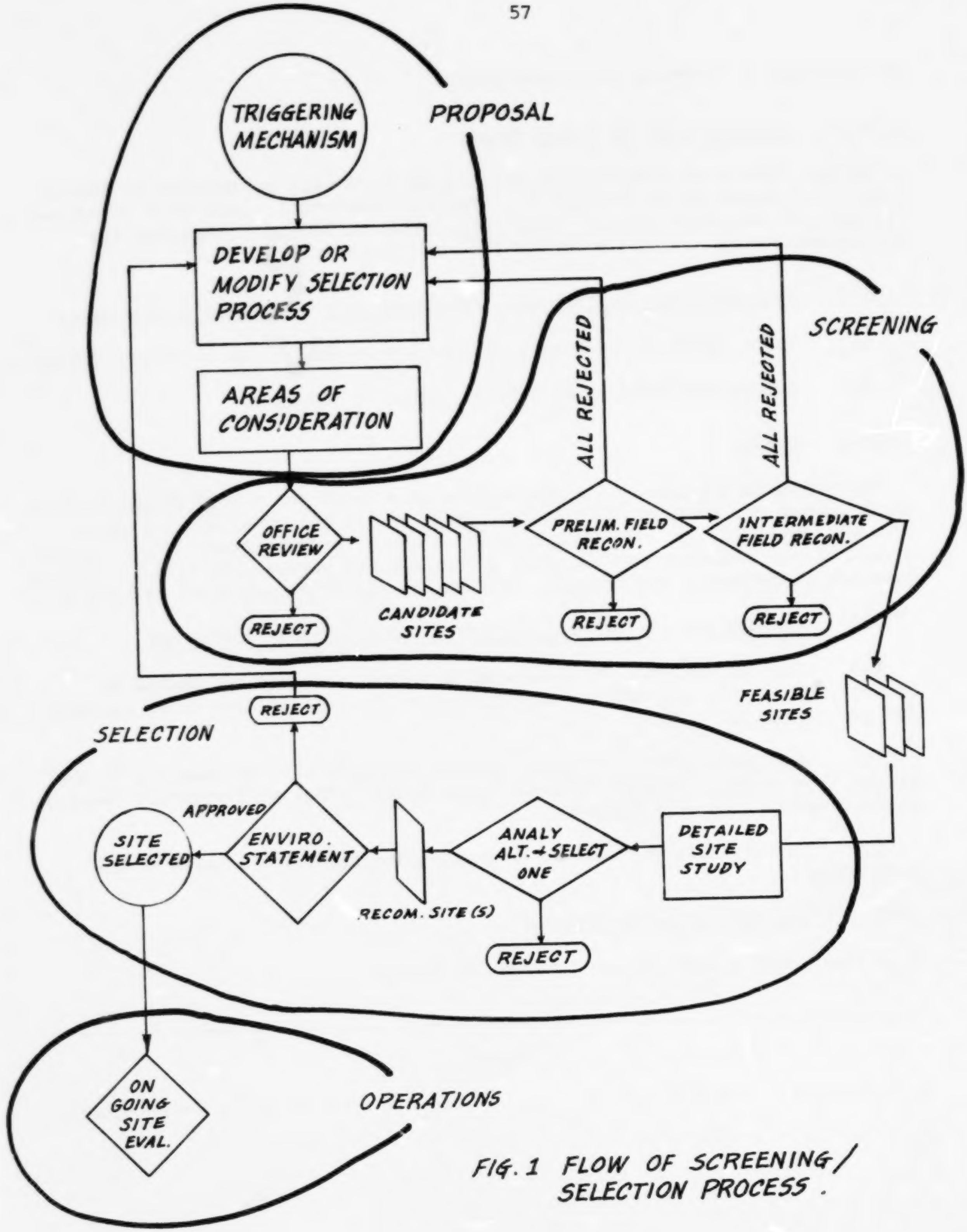

PROPOSAL
TRIGGERING MECHANISM
DEVELOP OR MODIFY SELECTION PROCESS
AREAS OF CONSIDERATION
ALL REJECTED
ALL REJECTED
SCREENING
OFFICE REVIEW
REJECT
CANDIDATE SITES
PRELIM. FIELD RECON.
REJECT
INTERMEDIATE FIELD RECON.
REJECT
FEASIBLE SITES
REJECT
SELECTION
APPROVED
SITE SELECTED
ENVIRO. STATEMENT
RECOM. SITE (S)
ANALY ALT. + SELECT ONE
REJECT
DETAILED SITE STUDY
OPERATIONS
ON GOING SITE EVAL.

FIG. 1 FLOW OF SCREENING/ SELECTION PROCESS.

.201 Triggering Mechanism

There is an urgent need for environmentally safe disposal sites for hazardous waste. The impetus for specific site analysis could be generated by one of the following:

- Congressional mandate.
- EPA or WFRC commitment.
- Separate or joint agency need.
- Application for a site by a proponent other than a Federal agency.

.202 The Screening Process

After potential areas or candidate sites are identified through proposals by an advocate, the process outlined in these guidelines provides a means for investigating, screening and rejecting unsuitable sites. At least three levels of investigation are visualized, namely (1) office review, (2) field reconnaissance, and (3) detailed site study. These levels and their interactions are shown diagramatically in Figure 1. Each level is expected to reject the clearly unsuitable sites and pass suitable and satisfactory candidates on to the next investigative level.

Factors to be investigated and evaluated are the same for each level of investigation, but the intensity, detail, and cost become progressively greater with each succeeding level. Screening leaves only the most promising sites, which will then require detailed study. Some of the "surviving" sites may well be more acceptable than others for factors other than those discussed herein; cost effectiveness, acceptability, etc.

It must be reemphasized that the screening process, if carried through Detailed Site Study, is both costly and time consuming, but is necessary to insure the long-term safety of a selected site. The need for safe disposal sites is so urgent that the investigator minimize repeating the process to further refine the analysis, i.e., making a situation estimate through tasks such as map-literature survey, preliminary reconnaissance, intermediate reconnaissance, then turning around and going through the same phases in a more detailed manner, leading up to an even more "detailed site analysis."

.202-1 The Elements

Four elements describe a candidate site for waste disposal in sufficient detail to allow the decision to commit resources for a detailed investigation of the site. They are:

- Hydrogeologic

- Biological (Ecological)

- Land Uses and Status

- Socio-economic

The first two elements are physical descriptions of the environment that will be affected by the commitment of a particular tract of land to the disposal of hazardous waste. The last two elements are more transient in nature because they can be changed through legislation, regulation, or changes in lifestyle. Section .300 of this Chapter has a more complete description of the elements and their major factors.

.202-2 Factor Analysis

The four elements are subject to analysis through a number of factors in each of the three levels of investigation (office review, field reconnaissance and detailed site study). Since the detailed site study will determine a site's suitability for selection, the intensity of investigation required is greater than in the previous two levels.

The factors and their ratings, for other than those specifically noted under Detailed Site Analysis (II.B.2.C), are shown on Plates 1, 2, and 3.

Plates 1, 2, and 3

(a) Office Review - Includes the review of historical records, agency inventories, research of broad area indicators, land status and use factors, socio-economic factors, and other literature.

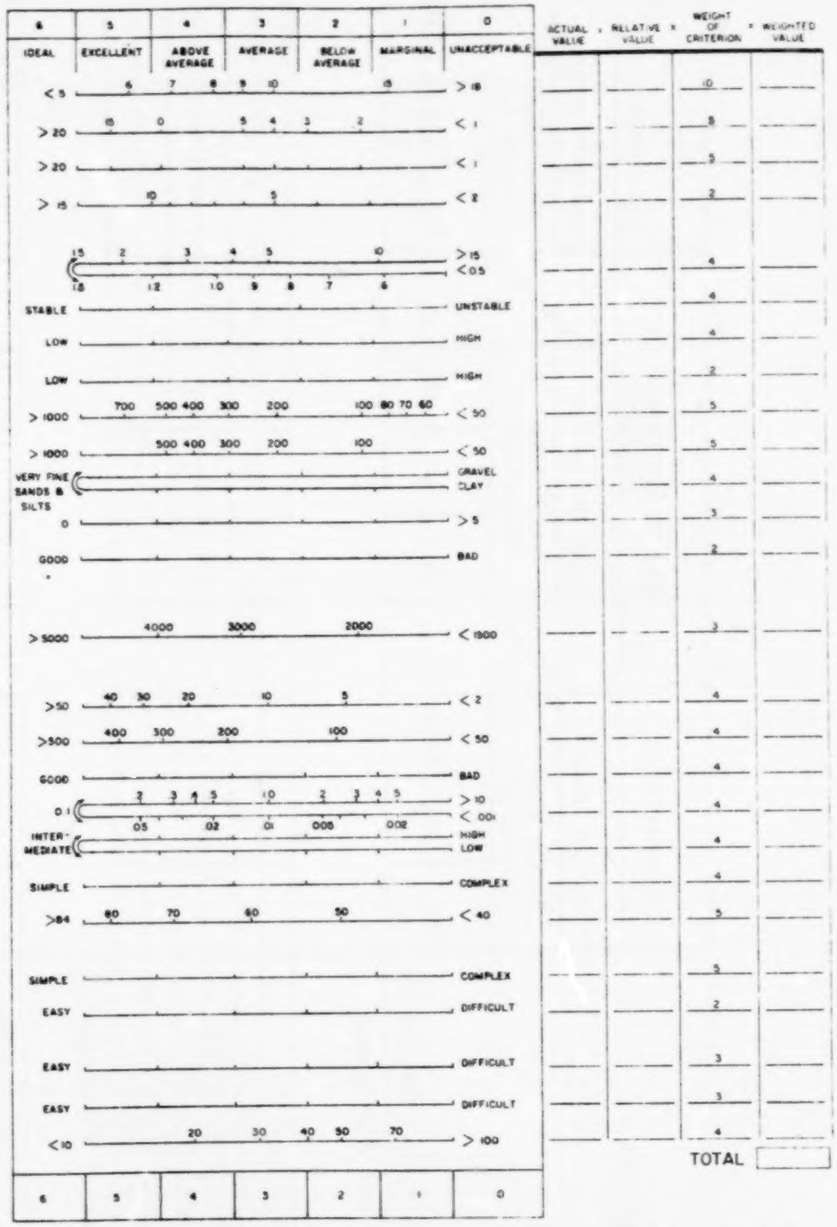
(b) Field Reconnaissance - Should include a validity check on the office review as well as an analysis of many of the physical (environmental) factors of the Hydrogeologic, and Biological Elements. The product of this level of investigation is the arraying of indicators on the Rating Charts. See Plates 1, 2, and 3.

Two separate levels of field reconnaissance may be required for both Hydrogeologic and Biological Elements, preliminary and intermediate reconnaissance, to lessen impact on expenditures and resources. The former requires the time of competent investigators; the latter requires the extensive use of instrumentation and exploration equipment.

(c) Detailed Site Analysis - If confidence in a particular site's environmental safety has not been confirmed through the previous phases, a more intense investigation may be necessary, especially in the Hydrogeologic and Biological elements. It might be more appropriate to consider this phase as one of the aspects of site selection (See Section .203) rather than screening, because this intensity of investigation would be carried out only on a few highly qualified candidate sites.

PLATE I

RATING CHART FOR SCREENING OF HAZARDOUS WASTE DISPOSAL SITES



RELATIVE VALUE

6	5	4	3	2	1	0
IDEAL	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	MARGINAL	UNACCEPTABLE

SCREENING/SELECTION CRITERIA	6 IDEAL		0 UNACCEPTABLE	ACTUAL VALUE ×	RELATIVE VALUE ×	WEIGHT OF CRITERION =	WEIGHTED VALUE
OFFICE REVIEW							
PRECIPITATION (INCHES/YEAR)	< 5	6 7 8 9 10 15	> 18			10	
NEAREST SURFACE WATER OR STREAM (MILES)	> 20	15 10 5 4 3 2	< 1			8	
NEAREST USE (DISCHARGE POINT) (MILES)	> 20		< 1			5	
SEISMIC ACTIVITY (MILES)	> 15	10 5	< 2			2	
PRELIMINARY FIELD RECONNAISSANCE							
SLOPE (PERCENT) (1)		15 2 3 4 5 10 18 12 10 9 8 7 6	> 15 < 0.5			4	
GEOMORPHIC STABILITY (QUALITATIVE)	STABLE		UNSTABLE			4	
FLOODING POTENTIAL (QUALITATIVE)	LOW		HIGH			4	
WIND EROSION POTENTIAL (QUALITATIVE)	LOW		HIGH			2	
DEPTH TO WATER TABLE (FEET)	> 1000	700 500 400 300 200 100 80 70 60	< 50			5	
DEPTH (DISTANCE) TO FRACTURED BEDROCK (FEET)	> 1000	500 400 300 200 100	< 50			5	
TYPE OF BURIAL MEDIA (QUALITATIVE)	VERY FINE SANDS & SILTS		GRAVEL CLAY			4	
SUBSIDENCE (FEET)	0		> 5			3	
OPTIMUM WIND DIRECTION (QUALITATIVE)	GOOD		BAD			2	
INTERMEDIATE FIELD RECONNAISSANCE							
DISTANCE TO KNOWN FAULT (FEET)	> 5000	4000 3000 2000	< 1500			3	
BURIAL MEDIA AND UNDERLYING STRATA							
SORPTION CAPACITY (ME/100 GM)	> 50	40 30 20 10 5	< 2			4	
THICKNESS (FEET)	> 500	400 300 200 100	< 50			4	
ENGINEERING PROPERTIES (QUALITATIVE)	GOOD		BAD			4	
PERMEABILITY (GAL/DAY/FT^2)	0.1	2 3 4 5 10 2 3 4 5 05 02 01 005 002	> 10 < 001			4	
EFFECTIVE POROSITY (PERCENT)	INTERMEDIATE		HIGH LOW			4	
STRUCTURE (QUALITATIVE)	SIMPLE		COMPLEX			4	
A RATIO OF PAN EVAPORATION TO PRECIPITATION MINUS RUNOFF	> 84	80 70 60 50	< 40			5	
HYDROGEOLOGIC COMPLEXITY (QUALITATIVE)	SIMPLE		COMPLEX			5	
SUITABILITY FOR CONTROL OF WATER TABLE (QUALITATIVE)	EASY		DIFFICULT			2	
MONITORABILITY (QUALITATIVE)	EASY		DIFFICULT			3	
REMEDIABILITY (QUALITATIVE)	EASY		DIFFICULT			3	
HYDRAULIC GRADIENT (FEET/MILE)	< 10	20 30 40 50 70	> 100			4	
						TOTAL	

6	5	4	3	2	1	0

Footnote 1: If the slope is less than 1 percent and the site does not lie in the defined floodway of a stream course or lake and all other criteria have relative values above average, disregard chart values for "slope" and substitute an arbitrary value of "6". In all other cases use chart values.

PLATE 2

Biological (Ecological) Factor Rating Chart for Office Review and Field Reconnaissance

FACTORS	Compatible				May be mitigated or foregone				Not Compatible			
	Does not exist			EXISTS	Does not exist			EXISTS	Does not exist			EXIST
	Recognized Potential				Recognized Potential				Recognized Potential			
	No	Low	High		No	Low	High		No	Low	High	
Factor Rating →	6	5	4	3	5	4	3	2	3	1	0	0
Threatened and Endangered Species:												
1. Fish: Population												
Critical Habitat												
2. Wildlife: Population												
Critical Habitat												
3. Plants: Population												
Critical Habitat												
Areas of Unique Biological Interest:												
1. Research Natural Areas												
2. Botanical Areas												
3. Zoological Areas												
4. Wildlife Refuges												
Wild Free-Roaming Horses and Burros Territory												
Vital Habitat for Fish and Wildlife.												

0=unacceptable; 1=marginal; 2=below average; 3=average; 4=above average; 5=excellent; 6=ideal

PLATE 3

	Does not exist	Existing	Does not exist	Existing
Land use status factors for proposed sites or adjacent lands	Low potential land use	Compatible with waste disposal	High potential for land use	Not compatible with waste disposal
1. Transportation System				
2. Water Resource Management				
3. Mining Claims and Operations				
4. Permits, easements (R.O.W.'s) and withdrawals				
5. Outdoor recreation				
6. Especially designated areas and those of special interest				
7. Agricultural				
8. State and local Government's Land Use Plans and Zoning				

(Check where appropriate)

These analyses are complex in nature and are addressed at the prior two levels by a professional investigator; at least, subjectively, On-site investigations of specific items, if necessary, may entail large expenditures of resources. Investigation may include, but not be limited to, the following analyses:

(1) Hydrogeologic

- Streamflow Data: Streamflow data for perennial and ephemeral streams in sufficient detail to determine base flow, maximum flows for evaluating the flooding potential of the site, and for constructing a stream hydrograph.

- Soil Moisture Tension: In situ measurements of soil moisture tension of the upper 15-30 feet of the proposed burial media. Measurements are made with a tensiometer inserted into the soil at a desired depth to measure soil-water tension. After a site passes the initial screening phase and is selected for more detailed analysis, these measurements should be conducted for a period of two or more years.

- Soil Moisture Measurements: In situ measurements of soil moisture content of the unsaturated zone down 30-45 feet should be made in specially constructed holes using a neutron soil moisture gauge or an equivalent method. The measurements should be made for a period of two or more years after a site passes the initial screening phase and is selected for more detailed analysis.

- Water Chemistry: Chemistry of the water in the aquifers and aquitards beneath the proposed disposal facility. This includes the pH, Eh, cations, anions, specific conductance, dissolved and suspended solids, and other factors which are needed to establish original baseline conditions in each formation, to differentiate between waters from the different formations, and to estimate the potential reactivity of the natural waters in the formations with leachates and contaminated waters which might result from disposal operations.

- Stratigraphy: Composition, sequence, thickness, age, correlation and other relationships of the stratified and non-stratified rocks beneath and within the vicinity of a proposed site which might affect the movement of water, stability of the rocks, site operations, or long-term retention of wastes disposed of therein.

- Hydraulic Data on Sub-surface Formations: Permeability, porosity, effective porosity, hydraulic conductivity, storage coefficient, hydraulic head or potential, and other hydraulic parameters of the subsurface water-bearing formations which are required to calculate the direction and rate of movement of groundwater beneath the site. Pumping, bailing, or slug tests of wells and physical property measurements of samples from these wells are usually required to make these determinations.

- Natural Fluctuations of Water Table: The natural fluctuations of the regional water table and of perched water tables beneath the proposed site should be known, particularly the expected maximum high water levels.

- Distribution of Hydraulic Head with Depth: Definition of the hydraulic head or potential of each aquifer and aquiclude beneath the site. The hydraulic head (potential) of each individual aquifer is commonly determined: (1) by testing each formation individually as it is penetrated during the drilling of a test well; (2) by testing the formations with inflatible packers after the drilling of the test well is completed; or (3) by constructing a group of wells, each of which is completed in a single waterbearing formation (commonly called a piezometer nest).

- Water Table Contour Map: A map showing by contour lines the upper surface of the water table, or zone of saturation, in the area around the proposed site. On occasion, a similar map showing the piezometric surface, pressure potential surface of the shallowest or other significant confined aquifer may be required. Areas where perched water tables occur should be shown where possible.

(2) Biological Communities

In addition to its physical characteristics, an ecosystem is composed of plants and animals organized by dependency relationships into communities. In order to assess the influence and importance of one element of the ecosystem to another or to predict the effects of a new activity, it is necessary to have inventory information concerning plant communities and their animal associates.

- Plant communities.

- Animal associates.

(3) Ecological Relationships

The ecological integrity of an area is dependent upon an array of processes and interactions which work to bind the various parts of the ecosystem into a functioning whole. Predominant relationships vary from ecosystem to ecosystem.

- Primary productivity.

- Plant successional trends.

- Stability (population and ecosystem).

- Predation (including parasite).

- Interspecific competition.

- Territoriality.

.202-3 Screening Process Re-evaluation

The rating charts are for guidance only and it is not to be inferred that a low ranking on any single factor, or a few factors automatically rejects a site from further investigation. Two alternatives would be appropriate if a site appears to be rejected based on these Guidelines:

(a) First, consider a larger number of sites and if then no viable candidate is found, proceed to the next step, which is

(b) Reassess the most likely site from a total resource foregone basis. The need for a "safe" disposal site may be greater than the loss of one or more factors. See Section .304.

.203 Site Selection

Selecting a site for the disposal of wastes may be an irreversible land use decision in that it commits a tract of land to this use to the exclusion of other uses in perpetuity. Therefore, the same evaluation of values foregone and other trade-off questions must be made as for any other land use decision.

Those sites not rejected by any of the three investigation levels (1) office review, (2) field reconnaissance, and (3) detailed site study, are considered to have physical and biological characteristics that are compatible with the proposed use.

Sites that survive this progressive rejection system must still receive public acceptance through the NEPA and political process. The data collected through Factor Analysis should be easily convertible to Environmental Statement format. Obviously the site(s) may ultimately be rejected in the political arena, even if assessed as acceptable by the process outlined herein.

.204 Site Operation

Once waste is accepted for disposal, a site is committed in perpetuity. Future generations will be responsible for monitoring. The data base assembled during the Screening/Selection process, however, will become the baseline for future monitoring procedures and requirements. The results of the monitoring are necessary to give the site operator sufficient lead time to take corrective action, and to mitigate unwanted effects resulting from disposal of wastes at the site.

.300 Description and Application of Site Screening Factors

.301 Hydrogeologic Element

.301-1 Every effort is to be made to prevent or reduce contact between water and wastes.

.301-2 Factor scale ranges are based on the special conditions existing in mainland Region IX, i.e.,

(a) Very large areas of unpopulated land with relatively low economic value.

(b) Significant areas with arid or semi-arid climate.

.301-3 The screening factors are highly selective in that they force a site into a "very low water" location (i.e., low precipitation, absence of surface waters, and great depth of ground water).

.301-4 Although the factors are ultra conservative regarding potential contacts of water and waste, they are somewhat liberal in other respects. For example:

(a) Once buried, it is assumed that seismic activity will have little effect on the wastes unless land surface rupture or displacement occurs within the site.

(b) Fluctuation of the water table, monitorability, remediability, etc., are not as important in a "low water" situation as they would be in a humid climate. In the latter, the relative impermeability of the underlying strata, site engineering design, and construction methods become more important.

.301-5 The data collected must be sufficient to predict the waste retention capability of a site, both in quantity and in time, as related to the type and toxicity of the wastes.

.301-6 This screening process can be very useful for: (1) identifying sites which have potential and are worth investigating further; (2) flagging critical factors which could limit or prohibit use of the site, and (3) indicating the need for specific engineering and construction. However, it has a danger which should be clearly recognized and guarded against. The comprehensive results obtained from each individual measurement are tabulated into a combined value. One or two critical factors, if negative, could negate the whole. The evaluator would then be in the position of averaging 20 excellent measurements with one or two unacceptable values and could obtain an excellent overall rating for a potential site which would be an inherent threat to health and the environment. Engineering modifications to the site to correct these unsatisfactory factors may be acceptable in some cases. However, there are some factors which are irremediable and require total rejection of the site (i.e., high precipitation, closeness to fracture bedrock, or shallow water table).

.301-7 The factors chosen deal with the availability, location, and movement of water, the properties of the burial medium and underlying strata, and processes which could disrupt the site, introduce water to the waste, expose the wastes or otherwise return the wastes to contact with the environment and man. A brief description of each factor is found in Appendix B.

.301-8 Where possible, common units of measure and specific limits were chosen for the factors. However, there are not standard units for describing certain factors, so a "qualitative" description must be used; for example, the geomorphic stability of a site cannot be easily quantified. For this type of factor, a qualitative evaluation must come from professional judgement of the site selection team. The unit of measure and range of value for each factor is shown on Plate 1 and given in Appendix B.

.301-9 Each factor is ranked and given a weighting value based, in general, on the estimated importance of the factor in causing the release of contaminants from the waste, in reducing the retention capability of the site, or in hastening contact of the waste with man and the environment. The highest ranking is given to water and its potential to contact the wastes. Physical isolation of the wastes by distance from man and water is ranked second. Factors which could alter conditions at the burial site, add to the complexity of the site hydrogeology, or affect the characteristics of the burial medium are ranked third. Included also and ranked last are those factors which definitely should be known about a site but are considered less important because it is presumed that there will be very little precipitation or inflow of water at the site. The relative importance and weight of hydrogeologic factors used in this screening system are displayed in Appendix B.

.301-10 This screening/selection system tries to develop a qualitative numeric rating of the hydrogeologic factors at a potential burial site (or area). A rating chart for screening the potential hazardous waste burial sites is presented in Plate 1. The chart provides places to enter the raw value for each factor graphically and numerically. After this is done, the weighted value for each factor can be determined by 1) locating the raw value on the graphic scale; 2) reading upward (or downward) to the relative scale and determining its relative value; and 3) multiplying its relative value by the weighing or ranking of the factor. A qualitative - numeric rating of the site can be obtained at each investigative phase.

The range of weighted values corresponding to the relative values is as follows:

Relative Value	Range of Numerical Weighted Values
Ideal	624-521
Excellent	520-417
Above average	416-313
Average	312-207
Below average	206-105
Marginal	104-1
Unacceptable	0

The ideal result shown on the screening/selection display (See Plate 1) would be a vertical line to the left of the chart. A left leaning trend is naturally desired.

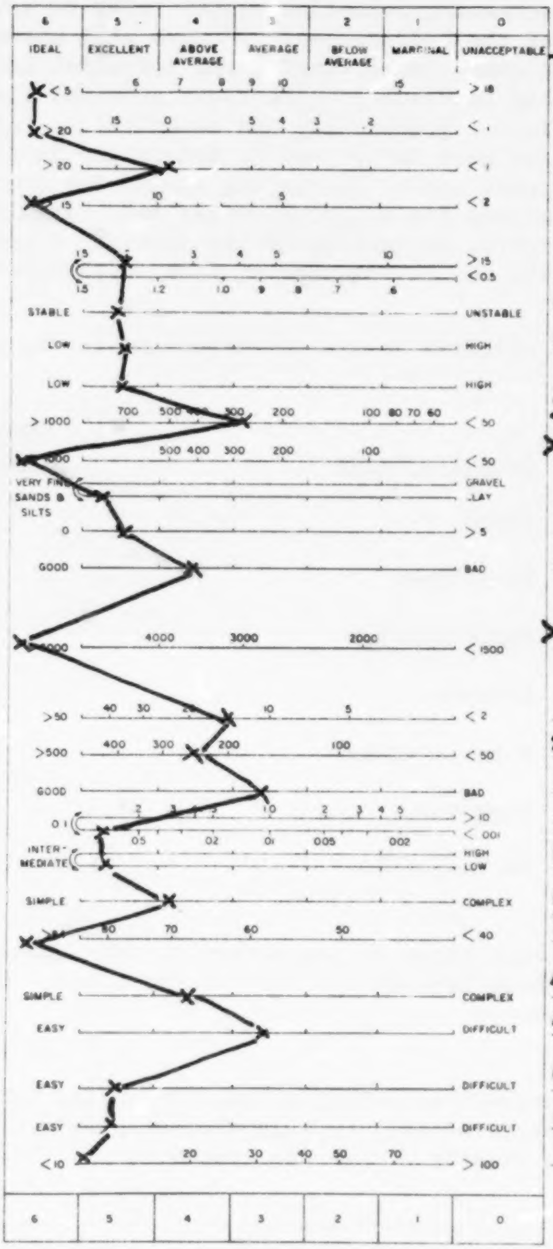
.301-11 A hypothetical rating of the commercial radioactive waste burial facility at Beatty, Nevada, by this screening/selection system is presented in Example 1 as an example of how the system works. The Beatty site is located at the north end of the Amargosa Desert, Nevada; has low rainfall; and has relatively good isolation from surface waters, ground waters, and use points. Most of the factors used are real. However, some values are not known and were estimated or put in for the purpose of presenting this example.

Example 1

EXAMPLE 1 69

RATING CHART FOR SCREENING OF HAZARDOUS WASTE DISPOSAL SITES

RELATIVE VALUE



SCREENING/SELECTION CRITERIA	ACTUAL VALUE	÷ RELATIVE VALUE	× WEIGHT OF CRITERION	= WEIGHTED VALUE
OFFICE REVIEW				
PRECIPITATION (INCHES/YEAR)	3	6	10	60
NEAREST SURFACE WATER OR STREAM (MILES)	>20	6	5	30
NEAREST USE (DISCHARGE POINT) (MILES)	10	4	5	20
SEISMIC ACTIVITY (MILES)	>20	6	2	12
PRELIMINARY FIELD RECONNAISSANCE				
SLOPE (PERCENT)	2	5	4	20
GEOMORPHIC STABILITY (QUALITATIVE)	EX	5	4	20
FLOODING POTENTIAL (QUALITATIVE)	EX	5	4	20
WIND EROSION POTENTIAL (QUALITATIVE)	EX	5	2	10
DEPTH TO WATER TABLE (FEET)	285	3	5	15
DEPTH (DISTANCE) TO FRACTURED BEDROCK (FEET)	>1000	6	5	30
TYPE OF BURIAL MEDIA (QUALITATIVE)	EX	5	4	20
SUBSIDENCE (FEET)	<1	5	3	15
OPTIMUM WIND DIRECTION (QUALITATIVE)	AA	4	2	8
INTERMEDIATE FIELD RECONNAISSANCE				
DISTANCE TO KNOWN FAULT (FEET)	>5000	6	3	18
BURIAL MEDIA AND UNDERLYING STRATA				
SORPTION CAPACITY (ME/100 GM)	15	4	4	16
THICKNESS (FEET)	250	4	4	16
ENGINEERING PROPERTIES (QUALITATIVE)	AV	3	4	12
PERMEABILITY (GAL/DAY/FT^2)	.08	5	4	20
EFFECTIVE POROSITY (PERCENT)	EX	5	4	20
STRUCTURE (QUALITATIVE)	AA	4	4	16
A RATIO OF PAN EVAPORATION TO PRECIPITATION MINUS RUNOFF	>84	6	5	30
HYDROGEOLOGIC COMPLEXITY (QUALITATIVE)	AA	4	5	20
SUITABILITY FOR CONTROL OF WATER TABLE (QUALITATIVE)	AV	3	2	6
MONITORABILITY (QUALITATIVE)	EX	5	3	15
REMEDIABILITY (QUALITATIVE)	EX	5	3	15
HYDRAULIC GRADIENT (FEET/MILE)	10	5	4	20
			TOTAL	504

EXCELLENT

.301-12 Detailed hydrogeologic site analysis

See Section II.B.2.c.(1).

.302 Biological (ecological) Element

The factors identified represent those biotic elements needed by the investigator to:

- Predict environmental changes occasioned by establishment and operation of a disposal site in terms of biological (ecological) components.
- Assess potential effects (both adverse and beneficial) on each element caused by the disposed materials in place or displaced by the disposal activity, and by permanent protection from other uses within the site enclosure on the site area, and on surrounding areas.
- Evaluate the relative significance of such changes and effects as an aid in site selection.

.302-1 A factor analysis and rating scheme has been developed to display the sensitivity of candidate sites regarding the primary biological factors. See Plate 2. Appendix C contains descriptions of some of the Biological Screening Factors.

The biological factor analysis and rating scheme can be applied to only a portion of all the factors that must be investigated, but it provides a minimum checklist for those factors that must be addressed during the Office Review and Field Reconnaissance Phases.

The following constraints will be applied to the use of this rating scheme:

(a) Each factor will be inventoried for existence on site or nearby.

(b) Each factor will be evaluated for potential, compatibility, mitigation or forfeiture, and relative significance of site to the whole.

(c) Tentative rejection criterion-reject sites with value of 2 or less for any factors.

.302-2 Interrelationships

There are additional subtle processes and relationships that are recognizable only by a skilled observer. These are not separable biological factors, but are basic considerations that must be taken into account during all three levels of investigation intensity (office review, field reconnaissance, and detailed site study). They are present on all sites and are investigated to determine relative significance, and to evaluate the effects of the disposal activity on them.

(a) Biological Communities

See Detailed Analysis .202-2(c)(2).

(b) Ecological Relationships

See Detailed Site Analysis .202-2(c)(3).

.302-3 Biological Factors Critical to Waste Disposal Sites

The following are factors that would tend to directly affect the selection of a particular site for waste disposal (as opposed to the effect of a waste disposal operation on the indigenous biological community):

(a) Rare or unique species or ecosystems. Includes organisms or places that have local interest or have received public attention for other special reasons (i.e., bristle-cone pine).

(b) Poisonous, noxious, ruderal, or other undesirable plant species. A selected site containing such species could become a sanctuary or source area for future spread of such undesirable species.

(c) Deep-rooted plant species which have the capability of translocating waste materials into above ground tissue where they may enter food chains or otherwise be transported off site.

(d) Burrowing animals (See (C) above).

(e) Wildlife incursion of the site for migration, browse, or water, as it affects the spread of contaminants.

.303 Land Use/Status Element

.303-1 Use of the factors

Man's past and present use of land and his actions regarding the sites considered for waste disposal must be fully known before a site can be selected to incure a site free from incumberances and modification that would jeopardize the environment safety of the site.

Past, present, and future uses/actions on adjacent and surrounding lands must be tested for compatability with the disposal of hazardous wastes.

Careful review and reconnaissance is necessary to ascertain the relative compatability of a land use or status by displaying the existence of a conflict with waste disposal. Plate 3 is a chart to highlight potential land use conflicts. A leftward array of checks is most desirable.

.303-2 Land Use/Status Descriptors

(a) Transportation System

Roads, trails, highways, railroads, communication system lines (above and below grade), and air strips for both public and private use.

(b) Water Resource Management

(1) Federal Power Commission licenses.

Hydroelectric dams, reservoirs, and associated transmission lines.

(2) Watershed - domestic and other beneficial.

(3) Water source - domestic and other beneficial.

(4) Geothermal Energy Source.

(5) Power generation facilities.

(6) Water treatment facilities.

(7) Flood protection facilities.

(8) Other adverse actions by man to affect water resources.

(c) Mining Claims and Operations

(1) Location and purchase - metallic or other substance in quantity sufficient to render the lands valuable on account of it, considering its location: Lode - "Rock in Place"; Placer; and necessary associated millsites.

(2) Leasable minerals - coal, oil, gas, sodium phosphate, potash, sulphur, etc.

(3) Common varities - Sand, stone, gravel, pumice, cinders, and clay.

(4) In situ leaching.

(5) Heap leaching.

(d) Encumberances

(1) Permits

Permitted occupancy and use of public lands under specific regulations of the agency with stewardship over the subject lands, including free and fee, covering a multitude of uses, with variable terms.

(2) Easements (R.O.W.'s)

Oil, gas (pipelines), railroads, irrigation, drainage, dams, and reservoirs, roads, bridges, trails, water transmission, power transmission, telephone/ telegraph, radio/electronics, etc.

(3) Withdrawals

Certain public lands withdrawn from appropriation and entry and reserved for governmental purposes under provisions of several acts of the Congress and EO 10355, i.e., power, reclamation, military, and mineral.

(e) Outdoor Recreation

Any activity on public lands that contributes to inspiration, relaxation, and enjoyment of the outdoors.

(f) Designated Areas and those of Special Interest

(1) Parks; National, State and local.

(2) Game refuges (See Biological; Wildlife).

(3) Significant archeological, historical, ecological, geological, or scenic area.

(4) Wilderness - An area designated by Congress as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions.

(5) Primitive and Roadless Areas - Lands suitable for inclusion in the National Wilderness Preservation System.

(g) Agricultural

Grazing (range allotments), timber production, cultivated lands, etc.

.304 Socio-Economic Element

These factors must be quantified or otherwise described or discussed. They are typical of all sites to be investigated and the list is not at all exhaustive.

.304-1 Proximity to waste source(s).

.304-2 Adequacy of transportation system for the delivery of hazardous materials.

.304-3 Resources foregone by the commitment of land to waste disposal in perpetuity (energy, mineral, water, etc.).

.304-4 Institutional constraints (politics at all levels).

.304-5 Population and density.

.304-6 Ownership and use pattern.

.304-7 Employment and community impact.

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APPENDICES

Appendix A	Comparision of Hydrogeologic Screening Factors suggested by several sources.
Appendix B	Description of Hydrogeologic Screening Factors.
Appendix C	Description of Biological Screening Factors.

APPENDIX A

A COMPARISON OF SCREENING AND SELECTION FACTORS FOR HAZARDOUS WASTE LAND DISPOSAL SITES SUGGESTED BY SEVERAL SOURCES

FACTORS	Level of Expenditure	Phase	SOURCES						
			1/ ITF	2/ P/W	3/ G/C	4/ L	5/ BNW	6/ W/W	7/ TL
OFFICE REVIEW	MINIMUM	SCREENING							
- Precipitation			X	X		X		X	
- Nearest Surface Water			X	X	X	X	X	X	
- Nearest Use or Discharge Point			X	X	X	X	X	X	
- Seismic Activity			X				X		
-									
FIELD RECONNAISSANCE	SIGNIFICANT								
- Slope			X	X	X	X	X	X	
- Geomorphic Stability				X	X		X	X	X
- Flooding Potential			X				X	X	
- Wind Erosion Potential			X		X		X		
- Depth to Water Table			X	X	X	X	X	X	
- Depth to Fractured Bedrock			X	X	X	X	X	X	
- Type of Burial Media			X	X		X	X	X	
- Subsidence			X						
- Optimum Wind Direction									X
INTERMEDIATE RECONNAISSANCE									
- Distance to Known Fault			X	X	X		X		
- Burial Media									
- Sorption Capacity			X	X		X	X	X	
Thickness			X	X			X	X	
Engineering Properties							X		X
Permeability			X	X	X	X	X	X	
Effective Porosity				X					X
- Structure				X			X		X
- Ratio of Pan Evaporation to Precipitation Minus Runoff				X					X
- Hydrologic Complexity				X	X				X
- Suitability for Control of Water				X	X				X
- Adequate Water Supply							X		X
-Monitorability				X	X				X
- Remediability									X
- Hydraulic Gradient			X	X	X	X	X	X	

APPENDIX A cont.

A COMPARISON OF SCREENING AND SELECTION FACTORS FOR HAZARDOUS WASTE LAND DISPOSAL SITES SUGGESTED BY SEVERAL SOURCES

FACTORS	Level of Expenditure	Phase	SOURCES						
			1/ TF	2/ P/W	3/ G/C	4/ L	5/ BNW	6/ W/W	7/ TL
DETAILED SITE ANALYSIS	DETAILED STUDIES	SELECTION							
- Three Dimensional Head Distribution				X	X				X
- Burial Media and Underlying Units Including Nearest Confined Aquifer									
- Water Chemistry				X	X	X	X		X
- Stratigraphy				X	X				X
- Ion Exchange Capacity				X	X	X	X	X	X
- Moisture Content of Unsaturated Zone				X	X				X
- Soil Moisture Tension				X					X
- Transmissivity				X	X	X			X
- Natural Fluctuation of Water Table				X	X				X
- Flow Data for Nearest Streams (Underflow)				X	X				X
- Water Table Contour Map				X	X	X			X
MINIMUM BASIC REQUIREMENTS		GOALS							
- Degree of Contact of Water with Waste			X	X	X	X	X	X	
- Distance (s) Along Critical Flow Lines			X	X	X	X		X	
- Direction and Rate of Movement of Critical Elements			X	X	X	X	X	X	
- Residence time in the Site for Critical Elements			X	X	X	X			

---

[1] Criteria identified during studies by the Task Force Sub-committee on Site Selection.

[2] Criteria identified or implied by Winograd and Papadopulis, 1974.

[3] Criteria identified or implied by Grizak, Cherry, et. al., 1973.

[4] Criteria identified or implied by Legrand, 1974.

[5] Criteria identified or implied by Battelle Northwest, 1973.

[6] Criteria dientified or implied by Williams and Wallace, 1970.

[7] Criteria adopted from other technical literature because of its apparent need in site selection.

APPENDIX B

DESCRIPTION OF HYDROGEOLOGIC SCREENING FACTORS

		RANGE OF VALUES		
FACTOR	UNIT OF MEASURE	IDEAL	UNACCEPTABLE	WEIGHT OF FACTOR
PRECIPITATION	Inches per year	5	18	10

Total precipitation per year, including rainfall and snowfall; the less precipitation, the better.

NEAREST SURFACE WATER OR STREAM	Miles	20	1	5

Distance of surface and subsurface travel path(s) along which contaminants from site must migrate to reach nearest surface water or stream; the longer the travel path, the better. A site conceivable could be located physically within several miles of a stream without penalty, if it were clearly separated from the stream by topographic and hydrologic divides, or not in the floodway of a stream, particularly in arid areas.

NEAREST USE OR DISCHARGE POINT	Miles	20	1	5

Distance of surface and subsurface travel paths along which contaminants from site must migrate to reach the nearest use of discharge point, the longer the travel path, the better. Similar exceptions as for preceding factor.

SEISMIC ACTIVITY	Miles	15	2	2

Distance in miles of site from a seismically active zone or area; the greater the distance, the better. It is assumed that the wastes, once buried, will be little affected by regional seismic activity such as earthquakes. The intent is to keep the site away from areas of high acceleration, known tectonic stress, suspected potential locii of earthquakes, active faults, and other seismic phenomena which could rupture or damage the disposal facilities.

SLOPE	Per cent	1.5	15 (max) 0.5 (min)	4

General slope of land surface measured in per cent. Land surface which are too steep, too flat, or too irregular present problems in construction, operation, and long-term maintenance. In example, steeper land surfaces increase the potential for cap maintenance, erosion, and denudation of the buried wastes; whereas, water (precipitation) will not run off fast enough, will tend to pond, and can infiltrate into the trenches and soak the wastes, if the land surface is too flat. Therefore, two unacceptable values for slope, one too high and one too low, and only one ideal intermediate value are used. Exception may be made for sites not located in stream floodways in arid climates or where flooding will not be a problem or can be engineered against.

GEOMORPHIC STABILITY	Qualitative	Stable	Unstable	4

The land should be geomorphically stable for thousands of years; that is, the rate of weathering and erosion should not be sufficient to affect the position and surface of the land surface for thousands of years. Because there is no generally accepted unit of measure for geomorphic stability, relative terms were used.

FLOODING POTENTIAL	Qualitative	Low and Infrequent	High	4

The potential for flooding of a site should be low. A site should not be located in the flood plain at a stream where rising flood waters can flood it. Nor should a site be located in a drainageway where descending runoff from a flash flood could fill an otherwise dry channel and flood it. Relative rating terms are used for the preliminary stages of investigation. In later detailed investigations, it might be necessary for certain sites to calculate the size of a flood event which would flood a site.

WIND EROSION POTENTIAL	Qualitative	Low	High	2

Wind could possibly cause construction and maintenance problems, serious erosion of the trench caps, and denudation of the wastes; the lower the potential, the better.

DEPTH OF WATER TABLE	Feet	1000	50	5

Depth below land surface to regional water table; the deeper the water table, the better. The depth to any perched aquifers; known or suspected in the area and the shallowest confined aquifer should also be known.

DEPTH OR DISTANCE TO FRACTURED BEDROCK	Feet	1000	50	4

Separation between burial zone and fractured bedrock; the greater the separation, the better. The values presented herein are for fractured bedrock which underlies the burial zone. If fractured bedrock lies downgradient along a travel path from site, a different set of values should be used.

TYPE OF BURIAL MEDIA	Qualitative	Very fine sands and silts	Clean sands and gravel clay	4

It is assumed that a granular medium such as clastic sedimentary rocks, strongly weathered bedrock, soils, glacial deposits, and certain pyroclastic rocks would be used as the burial medium strictly on the basis of its favorable engineering and workability properties. A brief description of the granular character of the deposit is desired. Strata of intermediate permeability, such as silt, siltstone, and silty sandstone, are preferred for burial media. Trenches in strata of low permeability may act as bathtubs which collect water during unusual precipitation events and overflow or soak the wastes. Contrawise, strata of high premeability allow water to pass too freely and in general, have poorer ion exchange characteristics.

SUBSIDENCE	Feet	0	5	3

Subsidence is the net lowering of the land surface caused by man's activities in four unrelated processes which are caused by (1) the intensive pumping of ground water, (2) the collapse of moisture-deficient deposits when water is first applied (hydro-compaction), (3) the oxidation of organic soils, and (4) the local extraction of fluids from producing zones in oil fields.

OPTIMUM WIND DIRECTION	Qualitative	Good	Bad	2

Wind can play an important role in the transport, resuspension, and diffusion of particulare and gaseous contaminants in arid and semi-arid regions. This factor is not well-defined but should be considered in locating a disposal site.

DISTANCE TO KNOWN FAULT	Feet	5000	1500	3

Distance in feet of the site from a known fault; the farther from a fault, the better. This factor is intended to include any "inactive" fault (a fault where no recent movement is suspected) which was not included under "Seismic activity."

BURIAL MEDIA AND UNDERLYING STRATA SORPTION CAPACITY	Milliequivalent per 100 grams	50	2	4

The sorption capacity of the burial medium as evaluated in the laboratory by the distribution coefficient, or K_d, method. The K_d is the ratio of activity concentration, or mass of a sorbed nuclide per unit of mass of solids to the activity or concentration of dissolved nuclide per unit volume of water (Thompkins and Mayer, 1947, Kaufman, 1963). The K_d is usually expressed in milliequivalents per 1000 grams; the larger the ratio, the better. The K_d is determined in the laboratory and is a function of a number of variables. At best, it can only approximate the potential sorption and ion exchange capacity of a burial media under limited laboratory conditions. Detailed studies in the field, or which duplicate field conditions, will be required if the site is selected for further evaluation. So far as practicable, the sorption capacity of underlying strata down to the base of the shallowest confined aquifer should also be determined.

BURIAL MEDIA

THICKNESS	Feet	500	50	4

Thickness of burial medium as a relatively uniform, homogeneous, non-fractured stratum; the thicker and more homogeneous the burial medium, the better. Fractures, sub-strata of lower permeability, and other heterogenities which reduce the ability to predict how and where contaminants may migrate should be subtracted from the overall thickness of the burial medium when they are encountered. The thickness and stratigraphy of underlying strata down to the base of the shallowest confined aquifer should also be determined.

ENGINEERING PROPERTIES	Qualitative	Good	Bad	4

The ease and facility with which burial medium can be worked in landfilling and burial operational the easier the medium can be worked, the better. This factor relates to the economics and engineering factors of disposal. A site and burial medium might otherwise be ideal; however, if the burial medium is too cemented or too indurated to rip or to work, the site cannot be used. A silty sand strata which can be easily excavated by dragline or bulldozers, and which would form trench walls that stand vertical seems to approach the ideal (See AASHO Classification of Soils).

PERMEABILITY	Gallons/day/foot^2	0.1	10 (max) .001 (min)	4

Permeability of burial medium in gallons/day/ft^2; burial media with permeabilities in the range of 0.1 g/d/ft^2 are more desirable; permeabilities significantly higher or lower are generally less desirable. The permeability of underlying strata down to the base of the shallowest confined aquifer should also be determined. The use of engineered liners and/or leachate collection systems may alter this evaluation such to provide a higher relative rating.

EFFECTIVE POROSITY	Per cent	Intermediate (No scale yet)	Too high (Max) Too low (Min)	4

Effective porosity of burial medium in per cent; burial media with intermediate effective porosites are more desirable, effective porosites which are too high or low are undesirable. No range of acceptable values or "ideal" intermediate value have been arrived at yet. The effective porosity of the underlying strata down to the base of the shallowest confined aquifer should also be determined.

STRUCTURE	Qualitative	Simple	Complex	4

The internal structure of the burial medium, the burial medium's relationship to the strata underlying it, and structures within these underlying strata should be determined. They all affect the ability to predict the movement of contaminants after they leave the trench; the more simple the structure, the better. The use of engineered linens and/or leachate collection systems may alter this evaluation to provide a higher relative rating.

RATIO OF PAN EVAPORATION TO PRECIPITATION MINUS RUNOFF	Ratio	84	40	

The ratio of pan evaporation to precipitation minus run off; the higher the ratio, the better. (U.S. Weather Bureau Tech. Paper No. 37-1959).

HYDROGEOLOGIC COMPLEXITY	Qualitative	Simple	Complex	5

The hyudrogeologic complexity of the site in relation to local and near-Regional hydrogeology, the simpler and more predictable, the better.

SUITABILITY FOR CONTROL OF THE WATER TABLE	Qualitative	Easy	Difficult	2

The degree to which the water table beneath the burial zone can be controlled by dewatering or other engineering techniques; the easier it can be controlled, the better. This factor is possibly of marginal interest in Region IX because of the potential for finding sites with deep water tables.

MONITORABILITY	Qualitative	Easy	Difficult	3

The degree to which contaminants migrating from the site can effectively be monitored; the easier they can be monitored, the better.

REMEDIABILITY	Qualitative	Easy	Difficult	3

The degree to which hydrologic and civil engineering manipulative actions can effectively correct the failure of, or ameleorate the threat to, the contaminant affected by the site; the easier the corrective manipulation actions, the better. Examples of remedial actions might include installing additional berms to divert unexpectedly large snow-melt runoff or installing a series of dewatering wells to lower a water table that was threatening to rise into the burial zone during an abnormally wet season.

HYDRAULIC GRADIENT	Feet/mile	10	100	4

The gradient of the water table from the site down gradient along the travel path(s) which contaminants from the site would migrate. The use of engineered systems, linens, and/or leachate collection systems may alter this evaluation to provide a higher relative rating.

APPENDIX C

DESCRIPTION OF BIOLOGICAL SCREENING FACTORS

1. Endangered Species

PL 93-205 requires all Federal departments and agencies to insure that actions authorized, funded or carried out by them do not significantly jeopardize the continued existence of endangered and threatened species.

Fish and their habitat including species of fresh or salt water fishes, crustaceans, and mollusks.

Wildlife and their critical habitats including nondomesticated mammals, reptiles, amphibians, birds, and certain groups of insects living in their natural environment. Cautionary note: critical habitat for most species have not yet been determined so all habitat may be judged critical until more precise determinations have been made.

Plants and their habitat including grasses and vascular plants living in their natural environment. Natural units of classification of dominant species associations and communities are identifiable with the various climatic zones in the Western States.

2. Designated Areas of Biological Interest

An active program exists for the preservation by formal classification of areas of unique biological interest, scientific values or educational opportunity and for other purposes. These areas may or may not be included in the National Registry of Natural Landmarks. This factor is concerned not only with those areas in which values have been identified and designated, but with the potential for future designation as well.

a. Research Natural Areas (many agencies, universities, etc., have similar programs currently coordinated in California through the California Natural Areas Coordinating Council).

b. Botanical Areas (including areas of ecological interest).

c. Zoological Areas.

d. Wildlife Refuge.

3. Wild free-roaming Horses and Burros

PL 92-195 establishes wild free-roaming horses and burros as an integral part of the natural system of the public lands and directs that all management activities shall be conducted so as to achieve and maintain a thriving natural ecological balance on these lands regarding wild horses or burros territory and their vital habitat.

4. Vital Habitat for Fish and Wildlife

For a wildlife species to survive and thrive, habitat needs for all stages of its life cycle must be met. Some stages often have extremely critical requirements, while others are much less sensitive to habitat conditions. The welfare of the species can, in part, be accommodated by focusing management attention on those stages most critical and assuring that required habitat conditions are met. Since both critical life cycle stages and the characteristics of required habitat vary from species to species, an all-inclusive checklist of critical requirements cannot be made. Vital habitat elements for some of the many species are presented but the list is intended to be suggestive only.

a. Migration routes.

b. Wintering areas.

c. Water sources in areas of limited supply.

d. Spawning areas.

e. Nesting and fledging habitat.

f. Calving, fawning, kidding, etc., areas.

g. Breeding areas.

h. Competition pressures.

CHAPTER 7

GUIDELINES FOR OPERATION AND MANAGEMENT OF HAZARDOUS WASTE DISPOSAL SITES

WORK ELEMENT FOR THE WFRC TASK FORCE FOR HAZARDOUS WASTE MANAGEMENT:

DEVELOP GUIDELINES FOR OPERATIONS AND MANAGEMENT OF HAZARDOUS WASTE DISPOSAL SITES.

SUB-COMMITTEE CHAIRMAN:

Len Lanni, Program Manager
Environmental and Safety Program
San Francisco Operations Office
Energy Research and Development Office
Oakland, CA 94612

CHAPTER 7

GUIDELINES FOR OPERATION AND MANAGEMENT OF HAZARDOUS WASTE DISPOSAL SITES

Work Element for WFRC Task Force for Hazardous Materials Management:

Develop guidelines for operations and management of hazardous waste disposal sites.

Sub-committee Chairman:

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The sub-committee charged with development of guidelines for operations and management of hazardous waste disposal sites was formed in August, 1974, and the first sub-committee meeting was held September 12, 1974. Additional meetings were held at about monthly intervals to review progress on assigned tasks.

The sub-committee discussed the concerns of management of hazardous waste at disposal sites and included the following as major subjects: establishing areas requiring research and development, identifying operation and post-opration site monitoring needs to assure safety of public, identifying permanent disposal versus interim storage (for retreivability), operator certification (by whom?), ascertaining hazardous waste disposal capabilities and requirements of those States in Region IX, establishing needs for operational safety and security for site, people, and environment protection, and development of criteria which would be suitable for new sites or modifying old sites (i.e., modifying existing "Class I" sites in California). Other concerns and developments that arose during the sub-committee deliberations dealt with conflicts with any mineral resource area (i.e., geotherman), joint use of the site either present or future (i.e., rad or non-rad, O.K. as radio beacon station but not as mobile home site, etc.), site ownership (Federal State, Private?), and temporary storage and processing for disposal. Still another major area of concern and discussion involved the wastes themselves: should some wastes be excluded from the site where alternate use or other environmentally safe disposal method exists, where further off-site processing is suggested or available, volume reduction, containerization, where wastes are not compatible with site regime, etc.

Discussions in the above areas led to the topics which the sub-committee felt should be covered in its report, to an outline of proposed guidelines, and specific areas for preparation of written segments of the report and assignment of these to individuals. These topics became the major headings or sections of the final report of the sub-committee and are shown in the table of contents which follows.

The purpose of the sub-committee was to provide substantive recommendations for guidance of whatever entity might be charged with the responsibility for design of operation and management procedures. It was the consensus of the sub-committee members that the format of the guidance documents should conform to the outline of existing guidelines such that it could be readily convertible to Federally published standards with minimum alteration, new operation manuals for individual agencies, or inclusion or reference in revision of existing operation instructions.

(Editor's Note: Following enactment of Public Law 94-580, October 21, 1977 by the Congress, the U.S. Environmental Protection Agency will be preparing regulations and guidelines in the general area covered by this report.)

GUIDELINES FOR THE OPERATION AND MANAGEMENT OF HAZARDOUS WASTE DISPOSAL SITES

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Part A-General Provision

.100 Scope

(a) These guidelines* are generally applicable to the disposal of hazardous waste materials. However, these guidelines do not apply to Class A explosives or radioactive materials (except for low specific activity radioactivity) as defined in the Code of Federal Regulations, Title 49 (Refs. 1,2).

(b) These guidelines are only advisory for Federal agencies (not "regulations"). In addition, they are recommended to state, interstate, regional, and local government agencies for use in their activities (3).

(c) These guidelines are intended to provide for environmentally acceptable disposal site operations.

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* The term "guidelines", as used herein is not to be construed in the sense of a "regulation," but is used to denote a "criteria", "recommendation" or "advice". These guidelines are presented in a format such that a government agency can easily convert them to regulations.

(1) Code of Federal Regulations, Title 49, Chapter I, Part 173, Subpart B, "Explosives;Definitions and Preparations."
(2) Code of Federal Regulation, Title 49, Chapter I, Part 173, Subpart G, "Radioactive Materials, Definitions."
(3) Editor's Note: Since this guidance document has been written, Public Law 94-580, the Resource Conservation and Recovery Act was passed by the Congress, October 21, 1976 and signed by the President. "Sub-title C" of this act provides for the establishment of a hazardous waste management program with regulations to be developed by the U.S. Environmental Protection Agency by April 21, 1978. Any recommendations in this report should be compared to those forthcoming from the latter action.)

The guidelines do not establish new standards but set forth requirements and recommended procedures to ensure that the design, construction, and operation of both existing and future hazardous-waste disposal sites meet the health and environmental standards for the area in which they are located. The guidelines are intended to apply equally to all hazardous waste generated by Federal agencies. Determination of compliance to meet the requirements of these guidelines rests with the regulatory/licensing agencies.

(d) The requirement sections contained herein delineate minimum levels of performance required of any hazardous disposal site operation. The recommended procedures sections are presented to suggest preferred methods by which the objective of the requirements can be realized. If techniques other than the recommended procedures are used, it is the obligation of the operator of the proposed facility to demonstrate to the licensing/regulatory agencies (in advance by means of engineering calculations and data) that the techniques to be used will satisfy the requirements.

(e) The hazardous-waste disposal site should represent the ultimate in operational and environmental safety. Only pre-engineered processes and facilities should be utilized and these should be described in a "site operation manual". Some parameters of a well engineered operation are as follows: Ideally, bulk liquid wastes should be treated or converted to its least hazardous, or most inoxious, form before final disposal unless such wastes are applied directly to earth, or into a lagoon, as part of specially designed treatment regimen, i.e., the "soil farming" of petroleum wastes or lagooning for physical, chemical or biological treatment. Great caution should be exercised to avoid mixing incompatible types of wastes either directly or into the same disposal pits or trenches (even if containered). Pre-treatment to a less noxious state reduces the potential for contamination of air and ground water and for later incidents of explosion, gaseous emissions, and unsafe exposure. Even containers rupture through corrosion. Disposal of containered waste should be minimized and considered a last-resort or a cost-effective solution for liquid wastes which are small in quantity and extremely hazardous, but stable in form. Unstable type wastes, those which become explosive, gaseous, or highly soluble when subjected to later oxidation upon exposure to air, hydrolize when exposed to moisture or may react violently when exposed to other wastes, should be rendered as inert as possible before disposal. All waste, whether containered or not, such as sludges, solids, concentrates, or other residues from pre-treatment processes, and are not to be stored for salvage in the near future, shall be disposed of by engineered burial utilizing a "grid-system" of location identification with records which are recorded with the local county Clerk. This latter procedure is necessary to assure compatibility of wastes, provide for inspections, provide for future recovery and reclamation, and make for orderly operation of the site.

(f) Disposal sites may be required to maintain temporary storage facilities, processing facilities, long-term storage facilities and disposal facilities of several types, including incineration depending upon the types and quantities of waste received. Intermediate-term storage for purposes of eventual reclamation of wastes will be allowed as an operator's option.

101 Definitions.

As used in these guidelines:

(a) "Cell" means compacted solid or hazardous wastes that are enclosed by natural soil or cover material in a disposal site.

(b) "Cover material" means soil or other suitable material that is used to cover solid or hazardous wastes in a disposal site.

(c) "Disposal" means to abandon, deposit, or otherwise discard waste as a final action after its use has been achieved or a use is no longer intended.

(d) "Engineered burial" means the systematic burial and daily cover of wastes in trenches, pits, or vaults designed by qualified engineering personnel. The trenches, pits, or vaults may include but are not limited to impermeable liners, access ramps, proper sloping, leachate collection facilities, and final cover with properly sloped, impermeable soil.

(e) "Groundwater" means water present in a saturated zone beneath the land surface.

(f) "Hazardous waste" means any waste materials or mixture of wastes that is toxic, pathogenic, corrosive, flammable, an irritant, a strong sensitizer, or which generates pressure through decomposition, heat, or other means. In addition, these wastes or mixtures of wastes can cause substantial personal injury, serious illness or harm to man or wildlife, suring or as a proximate result of any disposal of such waste or mixture of wastes. The terms "toxic," "corrosive," "flammable," "irritant," and "strong sensitizer" shall be given the same meaning as in the Code of Federal Regulations, Title 16, Chapter II.

(g) "Holding" means short-term storage of hazardous wastes.

(h) "Incompatible wastes" means any two or more wastes that, when combined or mixed in an uncontrolled manner, can cause or create the potential to cause explosions, violent chemical reactions, fires, extreme heat, toxic substance formation, hazardous waste discharge, or any other event that may endanger the public health or environment.

(i) "Intermediate cover" means cover material that must resist erosion for an indeterminate period of time, pending terminal use and final disposition of the site.

(j) "Intermediate-term storage" means storage of wastes in physicall retrievable form for future recovery.

(k) "Leachate" means liquid that has percolated through or from solid or hazardous waste and has extracted dissolved or suspended materials from it.

(l) "Licensing/regulatory agencies" means the organization elements that have the legal duty to ensure that operators or users of disposal sites comply with these guidelines.

(m) "Long-term storage" means storage and control of wastes that are too hazardous to release to the environment via known disposal technology, e.g., wastes that might return to the biosphere before a degradation process is completed. Such long-term storage shouldbe prepared in an engineered physically retrievable form for future treatment for recovery or burial.

(n) "Municipal solid wastes" means normal residential and commercial solid waste generated within a community. This solid waste is composed of garbage, refuse, sludges, and other discarded solid materials resulting from industrial and commercial operations and from community activities.

(o) "Processing" means to tret, detoxify, neutralize, incinerate, bio-degrade, or otherwise process a hazardous waste to remove its harmful properties or characteristics for disposal.

(p) "Residue" means all materials that remain after completion of any pretreatment.

(q) "Runoff" means the portion of precipitation and/or applied water that drains from an area as surface flow.

(r) "Sanitary landfill" means a disposal site employing an engineered method of disposing of solid wastes in a manner that minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying and compacting cover material at the end of each operating day.

(s) "Short-term storage" means the temporary storage of wastes only until disposal or processing operations can be applied.

(t) "Sludge" means the accumulated semiliquid suspension of settled solids deposited from wastewaters or other fluids in tanks or basins. It does not include solids or dissolved material in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial wastewater effluents, dissolved materials in irrigation return flows or other common water pollutants.

(u) "Vector" means a carrier that is capable of transmitting a waste from one organism to another, or away from the disposal site.

(v) "Water table" means the upper surface of a body of groundwater.

Part B-Requirements and Recommended Procedures

.200 Hazardous waste accepted.

.200-1 Requirement.

The site shall be designed and equipped to identify, accept, process, detoxify, store, and dispose of most hazardous materials. It shall be capable of accepting waste materials, which if handled at an inferior facility could result in severe hazard to human health and the environment. The site shall be capable of long-term engineered storage so that it can accept materials which cannot be safely disposed of to the earth and for which satisfactory treatment exists.

.200-2 Recommended procedures:

Design.

Equipment and facilities at the disposal site should be designed to ensure safe and convenient acceptance and inspection of hazardous wastes at the site.

.200-3 Recommended procedures:

Operations.

(a) Special techniques of certifying the character of waste, segregating it into classes for handling, and moving it to processing, storage, or disposal sites should be used.

(b) Procedures for handling especially bulky wastes, or wastes in unusual volume or state should be made a part of standard operating plans.

(c) There should be stringent waste identification requirements in any acceptance plan. All detailed analysis or characterization is the responsibility of the site user. All potential site users should notify the site prior to the delivery of any new waste to the site.

(d) The site operator should evaluate each new waste to be disposed at the site. A written storage/disposal plan should be prepared for each new waste prior to its acceptance at the site.

(e) A blanket permit may be granted for up to one year for disposal of recurring waste items as long as the waste characteristics remain the same as described in the original application. Recurring waste, for which a waste permit is in effect, may be accepted upon 24 hours' notice to the site operator. The permit and disposal plan for a recurring waste should be renewed at least once every 12 months.

(f) Each incoming waste load should be inspected upon delivery to the sige to ensure proper identification and characterization.

(g) At least one person on the site operations staff should be involved full time in accepting, inspecting, and sampling incoming waste loads.

(h) An analytical laboratory for screening and inspecting should be operated on the site.

(i) All materials arriving at site shall be in approved containers or tanks and labelled as required in regulations of the U.S. Department of Transportation.

.201 Hazardous wastes excluded.

.201-1 Requirement

(a) The licensing/regulatory agencies and the site owner/operator shall jointly determine specific hazardous wastes to be excluded, shall identify them in the plans, and shall display a description of excluded wastes to the users and the operating personnel.

(b) Hazardous wastes may be excluded at the operator's discretion if:

(1) The waste is too hazardous for release to the environment by disposal or possible escape from storage or transports, and full or partial detoxification technology exists.

(2) Conversion is necessary to render the wastes suitable for storage or disposal and is not available at the site.

(3) The waste is incompatible with site restrictions or a more suitable hazardous waste site is reasonably proximate.

(c) Appeals to such discretionary decisions can be made to the licensing/regulatory agencies, which may then require the acceptance of the waste for disposal.

.201-2 Recommended procedures:

Design.

Provision should be made for the continuing assessment and evaluation of both the site and new or changing waste types to derive recommendations for acceptance or rejection by the licensing/regulatory agencies.

.201-3 Recommended procedures:

Operations.

All users of the site should be provided with up-to-date lists of excluded wastes. These lists should be prominently displayed at the entrance to the site. Exclusion rules should be rigorously enforced for all users.

.202 Site selection

.202-1 Requirement.

Site selection and use shall be consistent with public health and welfare, air- and water-quality standards, and appropriate land-use plans. The selected site shall have the maximum capability to isolate wastes from the environment with potential for observation, control and monitoring the wastes and their by-products or effluents in perpetuity.

.202-2 Recommended procedures:

Design.

Not applicable.

.202-3 Recommended procedures:
Operations.

"Hazardous Waste Land Disposal Site Screening/Selection Guidelines," developed by the Hazardous Materials Management Task Force, Western Federal Regional Council should be the preferred site-selection tool so as to ensure that environmental, political, and sociological tradeoffs are addressed.(1)

.203 Site Design.

.203-1 Requirement.

(a) Plans for the design, construction, and operation of new sites or modifications to existing sites shall be prepared and approved by a registered professional engineer and shall be submitted to the licensing/regulatory agencies for review and approval prior to any operation. The design shall maximize the isolation of wastes and all processing and operations from the ground- and surface-water resources, from the public, and from wildlife.

(b) The design shall include all facilities necessary to ensure safe and environmentally acceptable operation of the site.

(c) The site's operational design shall maximize the capacity of the area to accept wastes.

(d) An environmental assessment shall be prepared for the licensing/regulatory agencies before the plan and design of the site is completed.

.203-2 Recommended procedures:
Design.

(a) The design should be based on a thorough survey of the types and volumes of hazardous wastes to be handled.

(b) The design should fully recognize the requirements for segregation of incompatible wastes, the need for separate facilities for processing, conversion, temporary storage, and disposal of wastes, and for the long-term monitoring of the waste and site effluents.

(c) Site development plans should include the various design factors addressed elsewhere, as well as:

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(1) Hazardous Materials Management Task Force, Western Federal Regional Council, "Hazardous Waste Land Disposal Site Screening/Selection Guidelines." (See Chapter 6 of this report.)

(1) Initial and final topographies at contour intervals of 1 foot or less.

(2) Land use and zoning within 10 miles of the site boundary, including location of all residences, buildings, wells, water courses, mining operations, roads, soil or rock borings, and water-supply utilities.
Location of all other utilities should be known within 500 feet of the site boundary.

(3) Employee convenience and equipment maintenance facilities.

(4) Determination of soil excavation and compaction characteristics.

(5) Plans for construction, land removal and replacement, and building placement.

(6) Plans for cutoff walls, impermeable barriers, and berms to isolate or contain wastes. Also, plans for drainage ditches and diversion structures to control runoff, spills, seepage, effluent from washdown areas, and leakage from repackaging and processing areas.

(7) Plans for design and operation of areas for short-term storage of wastes.

(8) Plans for retrievability of wastes that can be converted or otherwise processed after storage.

(9) Areal extent of soil types, faults, and active and potential landslip areas.

(10) Local wind patterns.

(11) Plans for segregation of wastes into compatible groups based on recoverability (e.g., heavy metals, etc.) and chemical reaction prevention, etc.

(12) Plans for final grading and cleanup so as to close the site and maintain it under surveillance.

(13) Intended points of entrance and exit.

(14) Interior roads and ramps with traffic flow patterns.

.203—3 Recommended procedures:
Operations.

Not applicable.

.204 Water quality.

.204-1 Requirement.

The location, design, construction, and operation of the site for hazardous waste conversion, storage, or disposal shall ensure reasonable nondegradation of water quality. If standards for particular facets of water quality exist, the site shall conform to the most stringent of applicable water-quality standards established in accordance with or effective under the provisions of the amended Federal Water Pollution Control Act,(1) the Safe Drinking Water Act,(2) or other applicable more stringent standards.

.204-2 Recommended procedures:

Design.

(a) The general criteria established by the California State Water Resources Control Board for Class I sites are recommended as criteria in selection and design of the site with regard to protection of water quality.(3)

(b) In addition, the following topics should be addressed:

(1) Detailed determination of the groundwater and surfacewater occurrence, natural water quality, and flow regimens within the site and at least 1 mile beyond the site boundary.

(2) An inventory of all water uses within the potential area of influence of the site, with projections of future potential uses.

(3) Sufficient determination of the regional groundwater and surfacewater systems so that the effect of future land use in the immediate vicinity can be projected in terms of site impact.

(4) Groundwater elevation and movement and the proposed separation between the water table and any wastes in whatever mode of storage or disposal.

(5) A thorough inventory of historical records and sources of information on the local aquifers and surfacewaters to permit identification of possible long-term hydrologic changes that may influence site design and management.

(6) Description of the soil and geologic materials to a depth adequate to allow evaluation of the water-quality protection provided by the soil and geologic materials.

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(1) PL 92-500 "Federal Water Pollution Control Act." (U.S. Code, Title 33, Sec 1151, et. seq.)

(2) PL 93-523 "Safe Drinking Water Act."

(3) Title 23, Chapter 3, Subchapter 15, California Administrative Code, "Waste Disposal to Land."

(7) An evaluation of potential leachate and effluent generation, and the proposed control system for excluding it from the hydrologic environment.

(8) A detailed analysis of the background quality of water resources in the potential zone of influence of the site. The analysis should include (but not be limited to) measurements of: pH; hardness; BOD; COD; the ionic, molecular, and/or atomic composition of suspended and dissolved material at trace levels; and the types and concentration of organisms which may be present. The background quality should be monitored for at least one year prior to operations.

(9) The intended water-quality monitoring program, which must include monitoring provisions during operation of the site and afterwards until the site is no longer a credible threat to water quality.

.204—3 Recommended procedures:
Operations.

(a) Surfacewater courses and runoff should be completely controlled within the site so as to exclude all surfacewater inflow to the site, to prevent infiltration to the greatest extent possible, and to channel runoff from the site to treatment facilities or to other approved disposal facilities. Site construction and grading should be such as to avoid ponding or flooding and to avoid erosion. All effluent or surface runoff from the site should be collected and treated to assure no discharge of hazardous materials from the site. Hazardous wastes and leachates should be continuously monitored to prevent contact with groundwater and surfacewater resources.

(b) The site operator should be aware of the bases for all design features and operating procedures so that any unforeseen circumstances which can affect water quality may be properly evaluated.

(c) An analytical laboratory should be available for doing routine water-quality analyses including, but not limited to, trace elements, organic and inorganic compounds, and indicator or pathogenic organisms.

.205 Air quality.

.205—1 Requirement.

(a) The site design, facilities, and operation shall be planned to minimize the discharge of dangerous levels of airborne hazardous materials into the working environment of the site or the surrounding area.

(b) If standards for particular facets of air quality exist, the design, construction, and operation of the facility shall conform to applicable ambient air-quality standards and source-control regulations established under the authority of the Clean Air Act,(1) as amended, or state or local standards effective under that Act, or other applicable, more stringent standards.

.205–2 Recommended procedures:
Design.

(a) The site should be equipped with or have available, state-of-the-art equipment for collecting, measuring, and analyzing the airborne emissions of materials.

(b) All unit operations at the site should be equipped to adequately prevent the discharge of dangerous levels of airborne hazardous materials.

(c) The monitoring plan should also include periodic on-site and off-site sampling and analysis of soils and flora in order to detect the accumulation of deposited hazardous substances that may have been discharged through the air.

(d) A detailed study of the meteorology of the site and its environs should be performed in order to: determine the frequency and extent of unfavorable and extreme weather; locate specific operational features within the site; guide the planning of a monitoring program; and determine preoperational ambient air quality.

.205–3 Recommended procedures:
Operations.

(a) Dust-control measures should be initiated as necessary to protect the health and safety of facility personnel and nearby populations.

(b) A comprehensive air-quality monitoring program should be designed to cover the period of operation of the site and until such a time that the site is no longer a credible threat to air quality.

.206 Gas control

.206–1 Requirement.

Vapors and decomposition gases generated within the disposal site shall be controlled on site, as necessary, to avoid posing a hazard to occupants of adjacent property.

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(1) PL-604 "Clean Air Act" (U. S. Code, Title 42, Sec 1857, et. seq.)

.206–2 Recommended procedures:
Design.

Plans should assess the need for vapor and gas control and indicate the location and design of any vents, barriers, or other control measures to be provided.

.206–3 Recommended procedures:
Operations.

Vapors and decomposition gases should not be allowed to migrate laterally from the disposal site to endanger occupants of adjacent properties. They should be vented to the atmosphere directly through the cover material, cutoff trenches, or ventilation systems in such a way that they do not accumulate in explosive or toxic concentrations, especially within structures.

.207 Vector control and wildlife protection

.207–1 Requirement.

Conditions shall be maintained that discourage the incursion, harboring, feeding, and breeding of vectors.

.207–2 Recommended procedures:
Design.

Plans should include contingency programs for vector control and wildlife protection and the operator should be prepared at all times to implement those procedures.

.207–3 Recommended procedures:
Operations.

Vector control or wildlife protection contingency programs should be implemented when necessary.

.208 Aesthetics.

.208–1 Requirement.

(a) The disposal site shall be designed and operated at all times in an aesthetically acceptable manner.

(b) The disposal-site operator shall maintain a continuing program to ensure orderly and systematic operation of the site so as not to create odors and other public nuisances to neighboring communities, residents, or other persons frequenting the area.

(c) Programs shall be implemented to cover the handling, returning, and disposing of emptied containers.
(d) Operational noise will be minimized.
(e) An effective litter-control program shall be included.

.208-2 Recommended procedures:
Design.

Not applicable.

.208-3 Recommended procedures:
Operations.

Not applicable.

.209 Cover material.

.209-1 Requirement.

Cover material shall be applied as necessary to minimize resuspension of soil or wastes, fire hazards, infiltration of precipitation, odors, and blowing litter; control gas venting and vectors; and shall be compatible with the surrounding natural environment.

.209-2 Recommended procedures:
Design.

Plans should specify:
(a) Cover material sources and soil classifications.
(b) Surface grades and side slopes needed to minimize infiltration and to promote maximum runoff without excessive erosion.
(c) Procedures to promote vegetative growth as promptly as possible to combat erosion and improve appearance of idle and completed areas.
(d) Procedures to maintain cover material integrity, e.g., regarding recovering.

.209-3 Recommended procedures:
Operations.

(a) Intermediate cover should be applied on areas where additional cells are not to be constructed for extended periods of time; normally, one day to one year.
(b) Final cover should be applied on each area as it is completed or if the area is to remain idle for over one year.

.210 Safety.

.210-1 Requirement.

OSHA(1) and health and safety working orders of state and local governments shall be observed as they relate to the general working environment; design, operation, and maintenance of equipment; and the handling of hazardous substances. A vigorous and continuing accident-prevention and safety program shall be instituted at the site.

.210-2 Recommended procedures:
Design.

Adequate design, facilities, and equipment should be available to ensure the safe handling of hazardous wastes and to respond to emergencies that may arise. Storage areas should be designated as high-security areas. All temporary storage should be protected from contamination, degradation, and loss.

.210-3 Recommended procedures:
Operations.

In preparation of the general operating plans of the site, safety precaution and contingency procedures should be detailed. Site personnel should know the characteristics of hazardous wastes. They should be thoroughly trained for the proper operation and use of equipment and safety gear, and on proper accident-prevention and emergency procedures. They should be thoroughly familiar with chemical hazards.

.211 General operations.

.211-1 Requirements.

General operations shall be coordinated to assure that they are compatibile with the physical characteristics of the site and provide for the health and safety of operating personnel.

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(1) PL 91-596 "Occupational Safety and Health Act." (U. S. Code, Title 29, Sec. 651, et. seq.)

.211-2 Recommended procedures:
Design.

(a) A plan should be prepared that details all operations at the site. It should include:

(1) Description of sequence of operations.
(2) Evaluation of waste compatibility.
(3) Periodic maintenance schedule.
(4) Emergency plans.
(5) A medical monitoring program.
(6) A safety program.

(b) The operational plan should not be confused with the planning and design stages, which details the specific components of the site. The plan should be kept current and contain information relating to site operation.

(c) The operational plan should include a flow scheme indicating how various wastes are processed, reclaimed, or disposed of, and should also include the proposed development stages of processing systems or waste-disposal areas

.211-3 Recommended procedures:
Operations.

(a) Operational details that should be included in the plan are:

(1) Acceptance and analysis of wastes.
(2) Monitoring of air and groundwater.
(3) Safety and emergency procedures.
(4) Transportation of wastes within site.
(5) Unloading of wastes.
(6) Holding and storage of waste.
(7) Processing of waste.
(8) Disposal of waste.
(9) Equipment maintenance.
(10) Personnel qualifications.
(11) Record keeping.
(12) Site security.

(b) The operational plan should be reviewed periodically by the operator and the licensing/regulatory agencies to ensure its adequacy.

.212 Records.

.212-1 Requirement.

The owner/operator of the disposal site shall maintain and provide records and monitoring data to the licensing/regulatory agencies.

.212-2 Recommended procedures:
Design.

(a) Plans should prescribe methods to be used in maintaining records which document the operations of the disposal site. Information on recording and monitoring requirements should be obtained from the licensing/regulatory agencies.

.212-3 Recommended procedures:
Operations.

(a) Records should be maintained covering at least the following:
(1) Major operational problems, complaints, or difficulties.
(2) Qualitative and quantitative evaluation of the environmental impact of the disposal site, with regard to the effectiveness of gas and leachate control, including results of: (i) leachate sampling and analyses; (ii) gas sampling and analyses; (iii) groundwater- and surfacewater-quality sampling and analyses upstream and downstream from the site.
(3) Vector control and wildlife protection efforts.
(4) Dust- and litter-control efforts.
(5) Inventory of waste identification and location for all wastes on the site (in perpetuity).
(6) Major site operations, especially with respect to their effects on the soil profile, topography, etc.
(7) Local meteorological data for a period of 10 years. These data should include, but not be limited to, records of precipitation, wind speed and direction, average daily temperature, and relative humidity.
(8) Personnel health records.

.213 Monitoring and surveillance.

.213-1 Requirements.

Plans shall detail methods for detecting discharge of hazardous materials from the site (in perpetuity), hazardous operations, hazardous designs in the site, and creation of aesthetically unpleasing situations. The licensing/regulatory agencies shall participate in monitoring and surveillance activities.

.213-2 Recommended procedures:
Design.

Not applicable.

.213-3 Recommended procedures.
Operation.

Not applicable.

.214 Quality-assurance program.

.214-1 Requirement.

A quality-assurance plan shall be written to cover all structures, systems, components, and operations whose proper function is necessary to prevent uncontrolled release of hazardous materials to the environment.

.214-2 Recommended procedures: Design.

The foremost objective of the quality-assurance program should be to assure that the site operator's procedures offer maximum protection to the environment, all commensurate with the scope, complexity, and duration of the task being undertaken.

.214-3 Recommended procedures: Operations.

(a) As a minimum, the plan should include the following key elements: a definite assignment of organizational responsibility for quality; a means of specifying the level of quality required for the job; the procedures for implementing the quality-assurance program; and an independent system for verifying compliance with and adequacy of quality requirements.

(b) Consideration should also be given to inclusion of the following elements in establishing a quality-assurance program:

(1) Indoctrination, training, and qualification of personnel.
(2) Document review and approval.
(3) Document release and change control.
(4) Control of interim storage and final burial of waste materials.
(5) Inspection, examination, and testing of waste materials when delivered to the site.
(6) Measuring- and test-equipment calibration and control.
(7) Lifting, handling, storage, and shipping control.
(8) Nonconformance reporting and analysis.
(9) Corrective-action control.
(10) Process and equipment qualification.
(11) Operations control.
(12) Records collection, storage, and maintenance.
(13) An internal audit system to assure that actions of the plan are properly implemented and that the plan is updated when necessary.

Appendix—Recommended Bibliography

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5. Ottinger, R. S. et al, Recommended Methods of Reduction, Neutralization, Recovery or Disposal of Hazardous Wastes, U.S. EPA, 16 Vol, NTIS, U. S. Dept. Commerce, 5285 Port Royal Road, Springfield, Virginia, 22161.

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CHAPTER 8

RESOURCE RECOVERY AND RESALE OF EXCESS CHEMICALS . DEVELOPMENT OF A DATABANK SYSTEM

Work Element for WFRC Task Force for Hazardous Materials Management:

Develop a plan for resource recovery and sale of excess chemicals and hazardous wastes which may still have value or which could be converted to materials of value.

This work element wad divided into two streams of action: (a) resource recovery within the Department of Defense and (b) resource recovery within the non-military agencies for industrial type chemicals and hazardous wastes. This division was made because it became apparent that the two types of agencies operated under differing types of regulations and utilized two separate supply functions. The work element was also assigned to two different persons on a volunteer basis as follows:

(a) For DOD agencies:

Mr. Rolland M. Hamilton, Manager,
Environmental Branch, Western Division,
Naval Facilities Engineering Command
San Bruno CA 94066

(b) For non-military agencies:

LTC John P. Meade, USAF,
Director, Catagorical Programs,
OASD (Health & Environment)
Department of Defense,
Washington DC 20301

The Executive Steering Committee originally requested that the Regional Representative of the General Services Administration undertake the portion of this work element for non-military agencies, but the Regional Office of this agency declined this assignment and resigned from the Task Force for the stated reason that the agency has no authorities to accept or dispose of the materials under consideration and therefore had no interest in participating in actions of the Task Force.

A way was found to resolve this hiatus, however. About a year after formation of the Task Force, the General Services Administration headquarters established "The Interagency Committee on Resource Recovery (ICORR)" which was charged among its various assignements to make recommendations on matters of policy, needed programs and actions, etc., pertaining to resource recovery of discarded materials including hazardous wastes or chemicals. A sub-working group was formed for the latter materials with LTC John P. Meade designated as its chariman. It was decided by the Task Force Executive Steering Committee that utilization for the outputs of the GSA headquarters action would best serve the Regional purpose and LTC Meade agreed to provide the Task Force members information on the actions of his group. Recommendations of the ICORR are included in this report for sake of completeness.

A. A Databank System for Recycling, Recovery, and Disposal within DOD Agencies:

1. Scope.

Hazardous materials may well be a very real part of our national resources. Even though a material, hazardous or otherwise, may not be in apparent demand at a particular time by its possessor, at another time or another place it may be of some economic value. This portion of the study is particularly concerned with a databank system for recycling, recovery, and disposal. Lest we investigate the potentials out of context, let us examine the total problem to provide a setting, a foundation on which to build.

a. Excess Hazardous materials may result from any of several actions or sources, including:

(1) Acquisition of more product than was required due to over-estimating; minimum quantity available for purchase greater than requirements; or subsequent development or change of plans resulting in lesser requirement.

(2) A by-product of some activity.

(3) Excessive time "on-shelf".

(4) Materials necessarily held for some contingency, for which the validity has expired.

b. It is rather obvious that some of these sources may be managed to reduce quantities of excess hazardous materials, but others are directly related to mission and work which must be performed. Accordingly, first attention should be directed to minimizing excesses of hazardous materials wherever feasible.

c. When excess of hazardous materials cannot be avoided, some series of actions must be determined and followed for "disposal". Disposal in this sense includes all aspects of use and reuse, recyling, alternative uses, detoxification, destruction, and long term storage.

The economics of disposal must consider the potential of the material as a valuable asset, perhaps in relatively limited supply, as well as costs for detoxification or destruction or storage following determination that it is hazardous waste without identifiable value.

(d) Acceptble priorities for disposal methods can follow a logical sequence, either by the owner or someone else.

(1) Reutilization of materials, as is.

(2) Modification or alteration of materials such that all or part can be used. (Including use as a fuel to produce energy.)

(3) Store for future use.

(4) Permanent storage, or abandonment.

(5) Destruction.

2. Databank Potential

Desireability of identifying a local use, either direct or of modified hazardous material, appears elementary. However, failing to establish a local use, some attempt to determine "another time, another place" for reutilization seems logical and worthwhile. Such procedures have been adopted and practiced for many years for non-hazardous materials pre-determined as having a ready market. So we must conclude that if hazardous excess materials can be readily marketed then it is feasible to attempt to recycle or resell these materials. This is particularly emphasized when the high cost of destruction or storage is considered.

a. Prior to the summer of 1974, the Department of Defense established a Defense Property Disposal Service (DPDS) headquartered in Battle Creek, Michigan, with a Defense Property Disposal Officer (DPDO) at many major military activities. Included in their mission is the responsibility for disposal of all DOD generated excess, surplus exchange/sale and other personal property authoried for turn-in which is salable.

(1) To carry out this assignment, DPDS established a procedure for military activities to report such salable materials to a local DPDO*. If local sale exceeds his authority, or a buyer can not be located, the material is referred ultimately to the computer databank in Battle Creek for screening by predetermined priority to locate a user. Priorities generally include defense activities and other government agencies, donation to specified organizations, public sale, and abandonment.

(*Defense Property Disposal Officer)

(2) Materials are identified by numerical designation, and minimum quantities/values are prescribed. Material condition is coded, and location identified.

(b) DPDS mission was modified on August 5, 1974, to include nonsalable properties (other than refuse and trash). Property found to have no utilization or sales value will be disposed of by the DPDO in landfills, by incinceration, as sewage, or other authorized means. Accountability will be accepted by the DPDO and recorded on disposal accounts. Physical transfer or acceptance in place of the property will be predicated on local circumstances and the tpes of property involved. The ability of the DPDO to physically accept certain property possessing unique characteristics or required special handling will be based on his existing resources, i.e., security, storage, material handling and other equipment, reclamation and demilitarization capabilities. Where the DPDO lacks adequate/suitable resources, or the technical expertise, to properly process property turned in for disposal, he will arrange for such support with the local host installation or the generating activity on a case-by-case basis. (Reference: DOD 4160.21M, Chapter 4, Page IV-2. 051636 August 1974).

(1) As this new DPDS function is implemented, the computer screening process is integrated with the salable items.

(2) DPDS has legal and contract authority to hire consultants to recommend potential users, including alternations and modifications which may make the material more usable and salable.

(3) One difficulty encountered relates to inconsistencies in reporting condition of the materials, in contrast to the condition of its container. Funding responsibilities for this screening is not fully and clearly defined. When a DPDO accepts "accountability" for screening a hazardous material, he normally does not have a capability for physical custody, so particular care must be taken to assure the material receives appropriate storage maintenance and does not "get lost in the system."

3. Limitations:

A workable system for complete screening to exhaust every potential for recycling and recovery of excess hazardous materials is currently available for Department of Defense activities. As experience is gained by use of the system, effectiveness can be expected to improve and problems of the databank resolved.

(a) This system is not available outside the Department of Defense. Disposal of salable materials for other than DOD activities is the responsibility of the General Services Administration (GSA).

4. Recommendation of Sub-Committee for DOD Agencies:

a. Defense activities should continue striving to improve development of the DPDS screening process to determine every potential for recycling excess hazardous materials. Only when a complete "search" is unfruitful should consideration be given to abandonment by permanent storage or landfill, or to destruction (such as by incineration), and only then can it be appropriately labeled as "hazardous waste".

b. A central, single, databank for determination of potential recycling for all Federal agencies has the obvious advantage of avoiding duplication.

c. A joint effort by DPDS and GSA seems appropriate, for singleness of purpose. Within their respective charters, mutual agreement is needed for responsibility, including funding. If a statutory change is necessary the problems of disposal of hazardous materials provides adequate justification for arequest to the Congress.

B. Recommendations of The Interagency Committee on Resource Recovery (ICORR):

LTC John P. Meade, Chairman of ICORR, reported the following recommendation were made by that working group in a report he made to the Task Force at its meeting in December, 1975:

"We recognize that new legislation addressing the hazardous waste disposal problem will be forthcoming eventually. Based upon this premise, the following recommendations are offered to ensure that all hazardous wastes are disposed of in an environmentally acceptable manner.

1. That the Environmental Protection Agency continue its efforts to designate items/classes of items that will require special handling and disposal consideration.

2. DSA continue to monitor the excess listings for materials requiring special handling and disposal.

3. All DOD incinerators and land fill operations be surveyed to determine capabilities, capacities, and conditions of facilities.

4. A Federal Agency be designated as lead agency to manage the hazardous waste disposal program.

5. The Interagency Committee on Resource Recovery (ICORR) evaluate the merits of interagency disposal proposals vs. continuation of existing programs of contractor disposal.

CHAPTER 9

RETROGRADE CHEMICAL AND PESTICIDE MANAGEMENT BY THE DEPARTMENT OF DEFENSE

Work Element for the WRFC Task Force for Hazardous Materials Management:

Develop a program and institutional arrangements for the management of retrograde chemicals and excess pesticides arising from the operations of agencies of the Department of Defense with emphasis on those materials located/in or destined for Region IX.

This work element was assumed by LTC John P. Meade, Director for Catagorical Programs, Office of the Assistant Secretary for Installations and Logistics, Department of Defense.

In discussions of the Executive Steering Committee it was soon discovered that the most pressing problems in Region IX of hazardous waste management were under the jurisdiction of agencies of the Department of Defense and these problems seem to resolve into two categories: (a) retrograde commercial and industrial type chemicals and pesticides being returned from the Asian theater of operations to the Sierra Army Depot (designated as the collection point by DOD) and (b) large stocks of DDT (primarily and other pesticides and excess industrial-type chemicals located at several military bases in Region IX most of which were carryover stocks from World War II and other operations at later dates in the Pacific area. LTC Meade suggested that the Task Forces, as a matter of first priority, assist his agency in solving problems related to these two categories of materials. This suggestion by LTC Meade was accepted by the Committee.

While the action at the Sierra Army Depot was local in nature once the materials arrived there, the scope of the other actions proposed exceeded the Regional boundary and became national, if not international, in scope, as far as the DOD was concerned. The Task Force served more in a motivating and advisory capacity in the extra regional action.

A. Retrograde Commercial Chemicals at Sierra Army Depot

The sub-work element for the management of retrograde commercial chemicals actually began before the formation of the Task Force, but was incorporated as a Task Force concern at the request of the Commanding Officer at the time of the Sierra Army Depot, COL Skinner E. Anderson, USA. A routine change in command/in FY 1975 brought COL Robert C. Hawlk, USA, into the Task Force activities. COL Hawlk continued the same enthusiastic support in this area that his predecessor demonstrated.* This is still an ongoing operation for the Department of Defense and continues to have the Task Force available for technical assistance in solving any new problems that arise.

(*Editor's Note: COL John DeGrazia, USA replaced COL Hawlk as Commanding Office of this depot in 1977.)

In the earlier stages of this operation through a cooperative effort of several agencies of the Army, DOD, and EPA, safe procedures for temporary storage of these materials, procedures for repackaging materials damaged in containers, and safe handling procedures were devised.

These procedures were presented at the December, 1975, meeting of the Task Force by COL Hawlk and illustrated with color slides. He recounted the actions taken at the Sierra Army Depot and distributed a "Fact Sheet" giving the essential details of this opration which is quoted, as follows:

"1. Sierra Army Depot (SIAD) was designated in July 1972 as the receiving point for commercial chemicals being returned from the Pacific Area. Since this date, SIAD has received approximately 185 line items (1,500 tons) of retrograde commercial chemicals. Action is taken to return usable items which have a demand, to the Army supply system. All other items are transferred to local Property Disposal Office (PDO) for disposition.

"2. All commercial chemicals at SIAD have now been transferred to accountability of PDO except DDT. A current authorization to screen DDT and transfer it to PDO is underway. Some repacking of DDT must take place before the transfer can be accomplished.

"3. During the initial receipt of retrograde materials in 1972 and 1973 problems were encountered because of damaged containers being shipped and some leakage occurring. Also, some containers labeled as one chemical contained another; e.g., a drum marked Diazinon contained paint thinner or turpentine.

"4. In 1972 a small quantity of chemicals were buried in pits on the depot. This material was removed from the ground in May 1974 and placed in containers or overpacked with plastic and stored in Conexes placed on an entrapment lined with impermeable mylar sheets. Tests were performed by Environmental Hygiene Agency (EHA) to determine leaching and other pollutants present. All tests proved negative with no indication that pollutants had reached the water supply.

"5. Shipments to date include:

Department of Agriculture, 17,875 gallons Malathion, June 1975
Edgewood Arsenal, 3,300 gallons Monoethanolamine, November 1974 and March 1975.
USDID: Ecuador, 64,600 #DDT powder, 17-18 September 1974.
  Yemen, 6 drums DDT liquid, October 1974.
  Honduras, 32, 680 #DDT powder, 26 December 1974.
  Phillipines, 23,750 # powder, 9 January 1975.

Additional shipments under USAID of DDT formulations should be finalized early FY 1976.

"6. The most recent shipment of commercial chemicals arrived SIAD 19 November 1975. Containers were in good condition and overpacked. Our next scheduled shipment is due at SIAD on or about 24 December 1975 and we should receive the remainder (approximately 1,300 tons) from Okinawa by 31 March 1976. Coordination between Military, Federal, State and Local agencies was made in September 1975 in preparation for this movement.

"7. Related Programs:

a. SIAD's involvement in handling and disposal of retrograde commercial chemicals has been closely coordinated with the EHA at Edgewood Arsenal and the Solid and Hazardous Waste Management Branch of EPA, Region IX.

b. SIAD participates as the Army representative in the Federal Regional Task Force for Hazardous Material Management, sponsored by the Western FEderal Regional Council.

Significant in the operation at SIAD was the development of a technique for temporary storage of containered chemicals outdoors which has proved to be both cost-effective and safe. Simply, the technique consists of construction of earth revetments around a relatively small storage area, lining the surface of the area enclosed and the revetments with a chemically inert, plastic sheet, and then covering over the plastic sheet with 6 to 12 inches of earth. Containers are then stacked on pallets within the area and covered with a double thickness of heavy tarpaulin, weighed down around the edges with pallets. Chemicals have been safely stored in the arid climate of Herlong, California, using this technique for up to three years now with only a minimum of routine inspection and maintenance. A more detailed decription of the technique and photographs are available from the facility."

B. The DOD Problems of Excess Pesticides and Other Industrial Chemicals.

LTC Meade assumed direction of this portion of this task, assigning sub-tasks to persons and agencies within the DOD for completion. The work was generally sub-divided into the following streams of action:

1. Develop a program of control of hazardous materials;
2. Conduct a survey of stocks of excess hazardous materials;
3. Identification of DOD toxic wastes; and
4. Modification of DOD training and certification program to meet the Federal Working Group Pest Management Standards.

The first step in the development of a program of control of hazardous materials was to review all Department of Defense Pest Control Programs. The Armed Forces Pest Control Board, under charter of the Council of Environmental Quality, proceeded to review all DOD pest control programs for (1) use of registered pesticides, (2) use of pesticides in accordance with labeling, (3) where the use is inconsistent with labeling, then evaluate alternative pesticides and newer methods of application, and (4) on minor use pesticides, where the manufacturer could not or would not register the item for minor use, the Department of Defense sought to act as its own registrant, following the EPA procedures, or induced the manufacturer to seek registration and labeling adequate to the Department's uses.

The Defense Supply Agency*was given the tasks of identifying and surveying locations/types and quantities of excess hazardous materials. This has now been done both for Region IX and internationally, and the data stored in a computer where it is periodically reviewed and updated to keep records current. A printout has been furnished to the Task Force for Region IX for planning purposes.

The sub-action concerned with identificaion of toxic wastes, in addition to normal effluents and to/the previously discussed inventory of hazardous materials, was assigned to each agency within the Department with a directive to evaluate the potentially hazardous products of waste incineration, land filling operations, and recycling programs with

(Editor's Note; Now the Defense Logistics Agency.)

instructions to be concerned with leachates, sludges, viruses, and pathogens. The first phase of this sub-action, of course, is that of identification which has now been substantially accomplished and reported on. The next phase will be to develop control techniques and technology for safe disposal of these materials and this work is proceeding.

Modification of/the DOD training and certification program to meet pesticide application certification requirements as stipulated by the Federal Insecticide, Fungicide and Rodenticide Act/ (FIFRA), as amended, Public Law 92-516, was coordinated through the Federal Working Group for Pest Management, a multi-agency group established under the auspices of the Council on Environmental Quality. The goals of this group were to incorporate common elements of agency certification plans into one unit to insure comparability and consistency of agency plans, to meet the most stringent of state standards and those of FIFRA. The Federal Working Group completed its mission and has since been dissolved. The Department of Defense Pesticide Applicator Certification Program developed under this concerted action has been finalized, submitted to the Environmental Protection Agency and was approved in December, 1976. The next steps for the Department now is to submit this plan to the various STate and Territories for their acceptance so that the applicators in the Department may be certified in those areas. This latter action is now in progress.

C. Action on Significant and Special Interest Hazardous Materials Disposal Problems.

Well over a million pounds of DDT in various strengths and formulations were stored in Region IX, most of which were excess materials returned from overseas following World War II, and the Korean and Vietnam conflicts. Since the shelf life of some of these materials had expired or their potentcy reduced, since there was not a continuing need for them in military operations, and since their use had been severely restricted by the Environmental Protection Agency within the United States, they constituted a problem for disposal. Incineration would have created air pollution problems which are not easily solvable. Another alternative was disposal in a sanitary landfill designated for receipt of hazardous materials. Obviously the expired, unusable materials would and hve had this fate. Through negotiations of the State Department of the U.S. AID program some of the high strength wettable powders were transferred to countries in the tropic areas for mosquito control. Considerable effort went into arrangements for transfer of the larger portion of this material to Mexico for similar use, but these negotiations failed at the diplomatic levels and no materials were shipped to Mexico. The remaining usable stocks were then advertised through Defense Supply Agency procedures for sale for "export or remanufacture only" (since use in this country is unlawful except for certain specified uses). As a result of the latter action most of the concentrated materials were returned to the manufacture, but the diluted materials will have to be landfilled or otherwise destroyed. As a result of these actions the past stocks are being reduced to quantities required for stock for overseas military operations.

Another item of interest is a defoliant composed of a 50-50 misture called "Herbicide Orange" (HO) of 2-4-5T and 2-4-D. During the Vietnam conflict it was discovered that the stocks on hand contained an impurity, Dioxin, a purported birth mutant. The use of the material was immediately ordered stopped and the materials collected for storage until its disposal could be arranged. 1,800,000 gallons of HO was stored at Johnston Island in the Pacific and 480,000 gallons at Gulfport, Mississippi. Research and studies were immediately initiated to find a safe method to destroy the materials and it was discovered it could be incinerated safely under special conditions of temperature and dwell time, but no commercial scale facilities exist, particularly at locations land based where air pollution standards could be met to incincerate the material. Simulated tests were run on two Dutch incinerator ships to see if the material could safely be destroyed at sea with results which were debated at public hearings held by the EPA in connection with an application by the Air Force for an ocean dumping permit. In the course of these hearings it was developed that there was a possibility of salvaging the herebicide by reprocessing so as to filter out the offending dioxin.

This latter concept was then tested in 1976 in a pilot plant constructed at Gulfport and proved successful. It now appears that the reprocessing alternative will be chosen and the material reprocessed as soon as details of destruction or disposal of the charcoal filter material which remains can be safely resolved (*See Editor's Note below).

Still another interesting problem situated in Region IX was large stocks of residual test, and sometimes exotic, rocket fuels left over from experimental work on rocket propulsion at Edwards Air Force Base, California. This problem is on the way to solution now with the design of a sophisticated incineration plant, complete with air scrubbing equipment, to burn the material. Construction is now underway. A report on this facility was presented to the Task Force.

Demilitarization of ammunition for the armed forces will soon be handled by a new and sophisticated plant being constructed at the Naval Ammunition Depot at Hawthorne, Nevada. This plant may have capability to handle hazardous waste other than ammunition once the backlog of the latter is worked off. The design of the facility was presented at one of the Task Force meetings.

Several military facilities had limited hazardous waste treating facilities even before the Task Force was formed, i.e., Naval Station, Pearl Harbor; McClellan Air Force Base, Sacramento, and others. These facilities have recently been improved and expanded. Reports on these were also presented at Task Force meetings.

(*Editor's Note: The disposal of the Dixin contaminated charcoal filter material became an insurmountable problem in that no State would permit landfilling or incineration. The entire stock of Herebicide Orange was subsequently incinerated on the shi, Vulcanus, in special hazardous waste incinerators at sea in the vicinity of Johnson Island in the central Pacific Ocean in the summer of 1977.)

CHAPTER 10

TECHNOLOGY AND INFORMATION TRANSFER

Work Element for WRCB Task Force for Hazardous Materials Management:

Presentation of information at regular meetings of the Task Force pertaining to environmental laws and regulations, methology and technology relating to Hazardous waste management, and changes in local regulation sin this subject matter area.

The accomplishment of the work element was assumed by the Executive Steering Committee by planning for presentations to be made at each of the meetings of the whole Task Force. Subject matter chosen for each meeting was on the basis of availability of speakers and materials which seemed to be appropriate at the time. A summary of subjects and speakers is as follows:

August 3 and 4, 1973 Meetings:

"Resume of Federal laws and regulations pertaining to NPDES, NESHAPS, and Ocean Disposal-William Pierce, Permits Branch, EPA, Region IX.
"New Pesticide Legislation -Dr. Jake MacKenzie, Pesticide Branch, EPA, Region IX.
"Proposed Hazardous Waste Act of 1973"-Charles T. Bourns, Solid and Hazardous Branch, EPA, Region IX

February 27 and 28, 1974 Meetings:

"The EPA Program in Hazardous Waste Management"--John P. Lehman, Director, Hazardous Waste Management Division, EPA, Washington, D.C.
"The Impact of Executive Order 11752 on Federal Waste Management Actions"-Irving M. Terzich, Coordinator Federal Activities, EPA, Region IX.
"Hazardous Waste Management Regulation in the State of California"-Dr. Harvey Collins, California Department of Health.
"EPA Guidelines for Solid and Hazardous Waste Management"-Carl Kohnert, Wolid & Hazardous Waste Management Branch, EPA, Region IX.
"EPA Recommended Procedures for Pesticide and Pesticide Container Disposal"-Harry Trask, Agronomist, Office of Solid Waste Management

Programs, EPA, Washington, D.C.

"State of the Art Presentations: Five EPA Contracted Studies Relating to Hazardous Waste Management:

(1) "A Study of Hazardous Waste Materials, Hazardous Effects and Disposal Methods"-3 volume report by Booz-Allen Applied Research, Inc.-Harry Trask, Agronomist, OSWMP, EPA, Washington, D. C.

(2) "Public Attitudes Toward Hazardous Waste Disposal Facilities"-report by Human Resources Organization -Harry Trask, Agonomist, OSWMP, EPA, Washington, D.C.

(3) "Recommended Methods of Reduction, Neutralization, Recovery or Disposal of Hazardous Wastes"-16 volume report by TRW, Inc.,-summary by Robert S. Ottinger, Ph.D.

(4) "A Program for the Management of Hazardous Wastes"-2 volume report-Battelle Memorial Institute, Pacific Northwest Laboratories-Summary by Ward H. Swift.

(5) "Alternatives to the Management of Hazardous Wastes at National Disposal Sites"-2 volume report-Summary by J. T. Funkhouser, Ph.D.

"Toxic Wastes Disposal, Air Force Rocket Propulsion Laboratory, Edwards Air Force Base"-Doug Haas, Chief, Fabrication Branch.

"Storage and Handling of Pesticides and Other Hazardous Wastes at the Sierra Army Depot"-COL Skinner E. Anderson, Commanding Officer.

"A New Commercial Venture to Recycle Hazardous Wastes"-Chemical Buyers Service, Berkeley, CA.-Dr. Paul Palmer, President.

"A Commercial Service for Conversion and Disposal of Some Types of Large Volume Hazardous Wastes"-Victor R. Johnson, President, Pacific Disposal Company, Martinez, CA.

November 12 and 13, 1974 Meetings:

"NEPA and Procedures for Preparing Environmental Impact Statements"-LTC John P. Meade, USAF, Director, Catagorical programs, DOD.

"The EPA Point of View on EIS"-Ed Merra, Regional Coordinator for EIS, EPA, Region IX.

"EPA 'Package #2' Regulations for Disposal of Pesticides and Containers"-Harry Trask, Agronomist, OSWMP, EPA, Washington.

"Hazardous Waste Management at the $25 Million Demil Facility Being Built at NAD, Hawthorne, NV"-Bill Moore, Project Engineer, Civil Design Branch, NAVFAC, Western Division.

"Deep Well Disposal of Hazardous Wastes"-Robert Scott, Geologist, EPA Region IX.

"Long Term Storage and Ultimate Disposal of Radioactive Wastews"-Dr. Alex Page, Deputy Director, Division of Waste Management and Transportation, Atomic Energy Commission, Washington D.C.

"New California Hazardous Waste Regulations"-Dr. Harvey Collins, California Department of Health.

"Public Land Law and Its Relation to Possible Use of Public Lands as Sites for Disposal of Hazardous Wastes"-Stuart Porter, Land Use Specialist, Bureau of Land Management, California, USDI.

"Proposed Federal Legislation for Hazardous Waste Management"-John P. Lehman, Director Hazardous Waste Division, Office of Solid Wastes, EPA, Washington, D.C.

"Federal Facilities and Compliance with Regulations for Prevention of Spills of Oil & Hazardous Materials"-Allyn M. Davis, Chief, Technical Support Branch, EPA, Region IX.

"Hazardous Waste Management Within the U.S. Army Hygiene Agency"-LTC Robert G. Grodt, MSC, USA, Chief, Solid Waste Management, U.S. Army Hygiene AGency, Aberdeen, Maryland.

December 3 and 4, 1975 Meeting:

"Safety Requirements of Motor Carriers in Transportation of Hazardous Materials"-Michael D. Sullivan, Director, Bureau of Motor Carrier Safety, Federal highway Administration, San Francisco.

"An Overview of the Sierra Army Depot Industrial Chemical Management Program"-COL Robert C. Hawlk, USA, Commanding Officer, Sierra Army Depot.

"Actions of the DOD Task Force in Hawaii for Hazardous Waste Management"-CDR John A. Walter, USN, Pacific Division, Naval Facilities Engineering Command.

"The Small-Batch Plant Approach for Treatment of Hazardous and Oil Wastes"-CDR John A. Walter, USN, Pacific Division, Naval Facilities Engineering Command.

"Present Status of Federal Legislation for Hazardous Waste Management"-Donald B. Mausshardt, Chief, Implementation Branch, Hazardous Wastes Management Division, OSWMP, EPA, Washington, D.C.

"Non-Nuclear Waste and Environmental Problems Management in the ERDA Energy Program"-Donald E. Reardon, Deputy Manager, San Francisco Operations Office, ERDA.

"Passivation and Encapsulation of Hazardous Wastes"-Dr. Robert Ottinger, TRW Company, McLean, VA.

"Pollution Potential Asociated with Leaching of Raw and Chemical Fixed Hazardous Industrial Waste Sludges"-Dr. Jerry Mahloch, Environmental Effects Laboratory, Waterways Experiment Station, Vicksburg, Mississippi.

"Movement of Pollutants in Soils"-K. Jack Kooyomjian, Environmental Engineer, Hazardous Waste Management Division, OSWMP, EPA, Washington, D.C.

"The Retrograde of Chemicals by the Army"-MAJ Gordon Goff, Headquarters, Army Material Command, Alexandria, VA.

CHAPTER 11

COORDINATION WITH STATE AGENCIES

Work Element for WFRC Task Force for Hazardous Materials Management:
Coordination final disposition actions with appropriate State agencies.

The Executive Steering Committee retained the responsibility for accomplishment of this work element. Actions were channeled along three paths: (1) State agencies with program responsibilities for hazardous waste management were invited to become members or participate in several of the Task Force activities and to attend its meetings; (2) The Executive Steering Committee scheduled briefing sessions for several agencies in the States of Nevada and Arizona; and (3) The Task Force decided to request WFRC endorsement of its outputs to States with an offer of the Task Force to provide technical assistance to the States in implementing hazardous waste management locally.

State agency personnel representing the Vector and Waste Management Section, Environmental Health Service Division, California State Department of Health (the designated hazardous waste management agency of the State); the California State Solid Waste Management Board; the Bureau of Sanitation, Division of Environmental Health Services, Arizona State Department of Health (the designated hazardous waste management agency of the State); and the Environmental Protection Services, Nevada Department of Human Resources have attended the Task Force Meetings and participated in its discussions. These agencies are therefore well acquainted with the development and actions which have taken place by the Task Force.

Dr. Harvey Collins, Ph.D., Supervisory Waste Management Engineer and Dr. David L. STorm, Ph.D., Research Chemist, both of the California State Department of Health have worked with the sub-committees which developed that criteria for site selection and for site management and have made extensive and valuable input to the output documents of these two sub-committees.

The Task Force was invited to make local briefing presentations on its activities both in Nevada and Arizona for the benefit of various State and local Federal agencies there. Two briefing seminars were held in Nevada. The Chairman and several members of the Executive Steering Committee journyed to Carson City and Reno to conduct these sessions on December 3 and 4 of 1974. Personnel of several State agencies and the U.S. Geological Survey attended the session in Carson City on December 3rd. The session in Reno on December 4th was attended by personnel of the Bureau of Land Management and the State Department of Conservation and Natural Resources. We were received cordially at both sessions and received promises of future cooperation in attaining our goals. Several of the State agencies and the BLM have called on the Task Force for assistance and proferred their assistance since those dates. Mr. Walt Weaver, Deputy Chairman of the Task Force and Sanitary Engineer for Region V of the USFS, Mr. Leonard Lanni, Safety Engineer for ERDA San Francisco Office, and Mr. Robert Scott, Geologist for Region IX of EPA journeyed to Phoenix, Arizona on October 2, 1975 to make similar presentations for State agencies and local Federal ones. The response was equally well received and with similar response. Several agencies sent representatives to subsequent Task Force meetings.

On August 19, 1976, Mr. John H. Beck, Chief of the Bureau of Sanitation, Division of Environmental Health Services, Arizona State Department of Health, by letter, requested Task Force technical assistance in establishing hazardous waste disposal sites and a regulatory program in that State. A similar requrest was made by Dr. Suzanne Dandoy, Director of the Department of Health to the Regional Administrator of the Environmental Protection Agency. The Regional Administrator responded by promising the requested assistance, within limits of resources, and the EPA initiated action to this end. Task Force members have participated on call to review draft regulations and actions leading to establishment of hazardous waste disposal sites. At the time of printing of this report, the State is conducting hearings to adopt hazardous waste regulations and proceeding with final steps in putting into operation a large hazardous waste reclamation and disposal site.

The Chairman has had several discussions since the briefing seminar with various agency personnel in the State of Nevada. Considerable interest and verbal requests for assistance have been received for the establishment of sites and programs in that State. The State is proceeding at the date of printing of this report with development and adoption of new regulations and of additional siting of facilities for treatment and disposal of hazardous wastes.

The State Department of Health of California requested assistance and participation of the Task Force in staging a national hazardous Waste symposium. The Task Force voted to undertake this assignment. "A National Conference About Hazardous Waste Management" has now been announced for February 1-4, 1977, at the Holiday Inn, San Francisco, California. A very informative program has been formulated which includes field trips to view hazardous waste reclamation and disposal facilities in the vicinity. It appears that attendance will exceed the seven hundred mark at the time this was written. This conference will provide a forum for disclosing the products of the Task Force. The State has also revised, in final form, its existing hazardous waste regulations and has augmented it regulatory staff to mount a comprehensive management program in this area.

Funded by a planning grant from the Environmental Protection Agency, and by a contract with a consulting firm, the State of Hawaii and the Territories of American Samoa, Guam, and the Trust Territory Islands of the Pacific are preparing aproblem assessment, proposed regulations, strategy for a regulatory program, and recommendations for facilities and procedures for disposing of hazardous wastes. The Task Force criteria are being utilized by the consultant as a basis of doing this work.

CHAPTER 12

SUMMARY AND RECOMMENDATIONS

Summary of Actions to date:

Definition of work elements for the TAsk Force was designed along the lines of objectives established by the Western Regional Council for the Task Force. This report documents actions taken and results achieved on those work elements. In addition to the specific objectives and work element assignments, there have been other accomplishments, actions, policy decisions, and programs established which were either direct "spin-offs" or motivated by the ongoing activities of the Task Force which are probably as important, if not more so, than the direct products. Some of these have been discussed in the body of the report, i.e., the construction of facilities at certain Federal agency locations, and establishment of hazardous waste management programs by various agencies.

In summary, the direct outputs of the Task Force effort have been in the form of working documents or criteria, directories and files and inventories.

The directory of Federal personnel concerned in environmental management has now been through two editions and one revision. The Naval Environmental Support Office of the Naval Environmental Protection Service, Port Hueneme, who have been responsible for this output, promise to continue updating the directory in the future and furnishing it to the concerned agencies in the Region. This Directory serves a continuing need to provide personnel working in the environmental protection areas with a ready-reference to persons who can provide advice and technical assistance in the many facets of hazardous waste management.

Criteria have been developed both for establishing and managing hazardous waste treatment and disposal facilities. Several agencies have indicated that they intend, not only to use these for the intended purposes, but to reprint and/or incorporate these recommendations into their operational procedures and instruction manuals.

Identification of existing and newly constructed facilities have resulted in multi-use by several agencies. Several large facilities in the planning stages or under construction for location in the region with the consensus of planning behind the design that, once they have satisfied an immediate need of the constructing agency, the facility will have multi-agency use (i.e., the Naval De-mil Facility at Hawthorne, NV, and the sophisticated incincerator at Edwards Air Force Base). The Sierra Army Depot at Herlong is now identified as a temporary repository and transfer point for all of DOD retrograde industrial chemicals. From this depot, the Defense Logistics Agency makes materials available to any Defense agency and some civilian agencies for reuse or for eventual resale or disposal.

The inventories which were conducted have provided a basis, not only for internal planning by Federal agencies, but also for State agencies who are embarking on regulatory programs and in guiding the establishment of treatment and disposal facilities which the Federal establishment may use. The inventories also served an immediate purpose of problem definition for each agency. Many of the accumulated materials which formerly were under no program for disposal, have notbeen recycled, treated, sold, or disposed of in acceptable manner (i.e., the millions of pounds of powdered DDT lying in storage in the REgion have been reduced to levels of current and authorized-use needs).

The development of a program for resource recovery and resale for excess industrial chemicals within the Department of Defense and the establishment of a computerized data-bank for the continuing advice of availability of such materials to the various DOD agencies has and will continue to result in considerable cost-savings to the Government. This activity is now assigned to the Defense Logistics AGency who furnishes DOD agencies with periodic listings of available materials which they may requisition. Those materials which are not moved by this procedure are then made available to civilian agencies or for eventual sale to the public or disposal (depending on the condition and use restrictions on the particular material). It is hoped that this program will serve as a model for a similar program for the use of civilian agencies through the General Services Administration who now have such a recommendation under consideration from its own Interagency Committee on Resource Recovery.

The Department of Defense agencies within Region IX had the most pressing of hazardous materials management problems at the time of initiation of the Task Force. At the time of this report, however, the Department has mounted programs to resolve most of its problems in this area. Undoubtedly the Task Force has been instrumental in providing incentive and guidance for these actions. Much credit, however is due to the Director of Categorical Program of the Office of the Assistant Secretary of Defense for Health and Environment for the active participation in the Task Force and the direction his office has given agencies with the Department for this program.

The Environmental Protection Agency has benefited directly from the opportunity that meetings of the Task Force provided for keeping the environmental managers of the various agencies informed of new regulations and laws and changes in these relating to environmental protection and the opportunity for discussion of actions to be taken comply with requirements. This action has also established a degree of rapport for all/interagency Federal environmental program that would not have been so easily accomplished otherwise.

The technology transfer presentations have served as valuable training for all who attended the meetings and have established a common base of knowledge from which locl actions could derive. There have been frequent expression sof appreciation of this activity from attendees. Perhaps one of the most valuable outputs of Task Force has been the opportunity for environmental managers of many different Federal agencies to get acquainted, discuss mutual problems, and develop mechanisms for for mutual technical assistance in hazardous waste management-and this was not one of the stated objectives.

Involvement of State agency personnel in this program area has resulted in assistance in those States in which hazardous waste management programs are being formulated. Specific technical assistance by the Task Force has been received in two states which are now undertaking the establishment of regulatory programs and of disposal sites. Once the States have established such programs and have taken actions that result in disposal sites for hazardous wastes, Federal agencies will be the benefactors.

An action of the Task Force at its most recent meeting has been to express to the Western Regional Council the appreciation of all participants for the opportunity to engage in the actions of the Task Force. It is the consensus of opinion that the effort has been most beneficial to all who participated. This action has served to demonstrate that a large number of agencies with many differeing missions and that a large number of people of many different disciplines can work together to accomplish a common set of objectives and do this in an efficient and effective manner. To borrow a current slang expression, "It has been a good trip" for all concerned.

Recommendations for Future Actions:

In March of 1976 the Task Force proposed the following recommendations and made a request of the Western Federal Regional Council for future actions as shown below:

(1) It was requested that the Council ask the Environmental Protection Agency to continue Regional meetings of agency personnel whose program assignment or interests lie toward the area of hazardous waste management on at least a once-a-year basis for the purposes of updating program requirements and for technology transfer.

(2) It was requested that the Task Force be continued for at least an additional year to accomplish the following objectives:

(a) Assist the California State Department of Health in presenting a national symposium about hazardous waste management. The Task Force has received a request to this end from the California Department of Health.* (See Editor's Note below)

(b) Provide technical assistance as requested and needed to State and Federal agencies in establishing regulatory programs and facilities for hazardous waste management.

(3) It was requested that the Western Federal Regional Council give permission for the printing and distribution of this report to all who request a copy. The Environmental Protection Agency has agreed to bear the cost of the original printing.

(4) It is further requested that the Council, through its Chairman, commend the final report to the Governors in Region IX or their designated agency heads, for their consideration in establishing regulatory programs and facilities for hazardous waste management and proffer the technical assistance by the members of the Task Force within reasonable limits of recources.

The Western Federal Regional Council granted the above requests and the Task Force has accomplished or is continuing action along the outlined objectives even at the time of printing of this report. The Work Plan for fiscal year 1977 is intended as Apendix IV.

(*Editor's Note: The symposium was conducted February 1-4, 1977, Holiday Inn, San Francisco. Approximately 500 person attended with representation covering whole of the United STates and from several foreign countries. "Proceedings" covering this symposium was printed and distributed by one of the Co-sponsors, the California Department of Health, Vector and Waste Management Section, Sacramento, California).

WESTERN FEDERAL REGIONAL COUNCIL

REGION IX

50 FULTON STREET
SAN FRANCISCO, CALIFORNIA 94102
(415) 556-1970

NEVADA
CALIFORNIA
ARIZONA
HAWAII

Also includes AMERICAN SAMOA, GUAM and the TRUST TERRITORY of the Pacific Islands

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Dept of the Interior

GEORGE W SMITH
Regional Director
Dept of Labor

APR 26 1974

MEMORANDUM TO: Members of Federal Regional Task Force
for Hazardous Waste Management

FROM : Fernando de Baca, Chairman
Western Federal Regional Council

SUBJECT : Task Force Charge

The Western Federal Regional Council has formed an inter-agency task force for hazardous waste management to accomplish the objectives listed below.

OBJECTIVES

1. Provide a mechanism for technology and information transfer relating to the management of hazardous materials in an environmentally safe manner for personnel within agencies who have assigned responsibilities in this area;

2. Develop and maintain a directory of individuals within agencies who are designated for contact regarding management of hazardous materials and environmental matters;

3. Develop an inventory of excess hazardous materials and wastes (including related information pertaining to these) which are in the perview of these Federal agencies;

4. Identify, develop and disseminate recommended plans of action for environmentally safe management (transportation, storage, resale, recycling, re-use, modification, and ultimate disposal) of these materials;

5. Explore, develop, and recommend courses of action to the Council to safely manage hazardous materials where problems are identified. This may involve either recommending action to the individual agencies concerned, or, implementing a multi-agency cooperative approach;

6. Coordinate inter-agency actions relating to hazardous waste management when requested by the agencies concerned; and

7. Coordinate final disposition actions with appropriate State agencies.

BACKGROUND

This action group has been in existence for eight months on an "ad-hoc" basis. It evolved from a discussion meeting of Federal agencies called on August 1 and 2, 1973, by EPA in Region IX. At that meeting, an ad-hoc Task Force was formed to investigate possibilities of joint Federal agency action for management of hazardous waste and to provide for transfer of technology relating to the subject. An executive Steering Committee was elected to handle the affairs of the Task Force, decide on courses of action, and develop recommendations for individual or joint-agency programs and actions to be presented to the Task Force for decisions. Synopses of previous meetings of both the Task Force and the Steering Committee have been furnished to the Western Federal Regional Council together with lists of attendees and participating agencies. A list of current projects is attached which outlines objectives, actions undertaken and status of actions to date. As other agencies learn of this action, more are asking to be included. Already some significant actions and results have ensued (as shown in the synopsis of Task Force Meeting of February 27 and 28, 1974).

At the February meeting of the groups it was generally agreed that this activity must have official recognition in order to be identified as a program element for continued resource allocation by the respective agency administrators; to receive policy direction and assistance in establishing itself as a regional inter-agency mechanism; to lend creditability to its actions; and to secure the level of action necessary to implement its recommendations. It was also agreed that a logical sponsor for this activity was the Western Federal Regional Council and that the Environmental Protection Agency should be the lead agency. The Task Force understands that non-member agencies can be included on FRC Task Forces. The Steering Committee was instructed to request sponsorship of the WFRC at the earliest possible date.

LEAD AGENCY AND COUNCIL MEMBER INVOLVEMENT

The Environmental Protection Agency is designated as the lead agency with Mr. Paul De Falco, Jr., EPA Regional Administrator, responsible to the Council for accomplishment of actions indicated above. The Council Secretariat liaison is Mr. William G. Walker (415/556-6695).

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CHAIRMAN

At its February, 1974 meeting the Task Force elected as its Chairman, Mr. Charles T. Bourns, Chief, Solid & Hazardous Waste Management Branch, Hazardous Materials Control Division, Region IX, Environmental Protection Agency (Address: 100 California Street, San Francisco, California 94111; Telephone: 415/556-4604).

TASK FORCE MEMBERS

The attached list describes the individuals of the elected Steering Committee and agencies currently included in the Task Force and the individuals currently representing those agencies.

MEETING DATES

The Task Force as a whole shall meet at intervals of at least each six months on dates and at places determined by the Steering Committee. The Steering Committee will meet as often as necessary. The next Steering Committee meeting is scheduled for 9:00 a.m., April 23, 1974, Room 501, on 100 California Street, San Francisco. Each Steering Committee meeting is called by the Chairman.

TIMEFRAME

The Task Force will submit reports (or minutes) of its meetings and on specific accomplishments as they occur. The Task Force shall complete its work and submit a final report by June 30, 1976. The term of the Task Force may be extended to implement ongoing strategy if need be.

FUNDING

Each participating agency will provide resources of the time of its designated staff, and travel expenses to attend Task Force meetings and Steering Committee Meetings and to accomplish the necessary work related to these. The lead agency will provide clerical staff for routing needs and arrange meeting places. If and when special projects or investigations develop to the stage of requiring additional resources commitment, the Steering Committee and/or Task Force shall recommend appropriate funding mechanism through the responsible Council member to the Chairman of the WFRC for Council approval and action.

QUESTIONS

Any questions you may have concerning participation in this effort should be made to the Chairman of the Task Force or taken up with the Steering Committee for resolution.

Attachments

Federal Regional Task Force For Hazardous Waste Management

List of Projects

Date Initiated	Project Description	Date Completed or Status
8/1/73	Briefing and updating on Federal and State laws and regulations relating to hazardous waste management. This is a continuing activity with a presentation at each Task Force meeting.	Continuing
9/20/73	Identification of source of information on applicable laws, Federal and State.	2/28/74
8/1/73	DOD Sub-Committee on Actions and Plans for Disposal of Excess Stocks of Pesticide. This is a continuing activity with first emphasis on DDT. Reports are made at each Task Force meeting.	2/28/74 (1st Report) Continuing
9/20/73	Recycling of Usable Hazardous Materials: Step 1: Establishing of Databand for interchange of information on available materials.	2/28/74 (1st Report) Continuing
9/20/73	Establishment of Directory of Agencies and Individuals Concerned with Hazardous Waste Management. Directory to be updated annually.	2/28/74 (1st Report) Continuing
9/20/73	Land Disposal Alternatives: Step 1: Development of Criteria for Site Selection.	2/28/74 (1st Report) Continuing
3/19/74	Step 2: Preliminary Evaluation of Sites, using criteria. Step 3: Publication of Criteria Step 4: Development of Proposal(s) for Establishment and Management of site(s).	
9/20/73	Presentations of "State of the Art" (Technology Transfer) relating to hazardous waste management. This is a continuing activity.	2/29/74 (1st Reports) Continuing
2/29/74	Securing of official recognition as an inter-agency action.	4/2/74
3/19/74	Definition of the Scope of the Hazardous Waste and Excess Chemical Disposal Problem within the Federal establishment in Region IX--an inventory.	To be initiated

Date adopted: 7-23-74 New ( ): Continuing (X); Amended (X)

WESTERN FEDERAL REGIONAL COUNCIL
FY 1975 OBJECTIVE AND OPERATING PLAN

FRC GOAL #IV ACTIVITY # IV-B: Hazardous Materials Management

TASK FORCE GOAL: To provide a coordinated overview and proper mechanism for technology and informational transfer relating to the management of hazardous materials in an environmentally safe manner within the Federal Establishment throughout Region IX.

BACKGROUND/APPROACH: This is a continuation of FY 1974 activity. The Council serves primarily as parent to an interagency group including many non-WFRC member agencies which came together to coordinate and rationalize their individual efforts in the area of hazardous waste management.

IMPLEMENTING MECHANISM: Hazardous Waste Management Task Force LEAD AGENCY: EPA OVERSIGHT RESPONSIBILITY: Natural Resources Standing Committee (NRSC)	RESOURCE REQUIREMENTS	
	AGENCY STAFF INVOLVED:	PROGRAM FUNDS INVOLVED
	DOD, EPA, ERDA, DOT, FEA, GSA, USDA, USDI	YES ( ) NO (X)
OBJECTIVES	ACTION BY	TARGET DATE
1. Develop directory of agency personnel working in hazardous waste materials in region (2nd edition)	Task Force	12/31/74
2. Develop an assessment of types and quantities of hazardous materials which may become non-nuclear wastes to be stored in, transported through, destined for, or to be disposed of by the Federal Establishment of Region IX: (For planning purposes)		
a. DOD agencies	DOD	6/30/75
b. Other Federal Agencies	Task Force	3/30/76
3. Design and promote adoption of action plans as follows for environmentally sound management of hazardous materials:		

OBJECTIVES	ACTION BY	TARGET DATE
a. Develop selection criteria for disposal sites	Task Force	8/1/75
b. Design computerized recycling programs to include all Federal Agencies:		
(1) DOD Agencies, in operation for	Task Force	6/30/75
(2) Inclusion of Other Federal Agencies	Task Force	12/30/75
c. Develop operation criteria for hazardous waste disposal sites		3/30/76
d. Identify, develop, upgrade or otherwise secure disposal sites and operations meeting above criteria for use of the Federal Establishment	Task Force	4 /30/76
e. Prepare a compendium of laws and regulations and critieria pertaining to the transportation of hazardous wastes	DOT /USCG	6/30/75
f. Provide for disposal of excess stocks of pesticides and other hazardous materials in possession of the Department of Defense:		
(1) Pacific Islands Areas	DOD/Pacific	9/30/75
(2) Sierra Army Depot Stocks	Sierra Army Depot	9/30/75
(3) Review of all DOD Pest Control Programs	DOD/OASD/H&E	11/30/74
(4) Survey excess DOD hazardous materials	DOD/OASD/H&E	1/30/75
(5) Identify DOD toxic wastes	DOD/OASD/H&E	5/30/75
4. Transfer of information relating to the management and disposal of hazardous materials	Task Force	Each Task Force Meeting
5. Coordinate final disposition actions with appropriate state and local agencies	Task Force	As appropriate and timely
6. Final Task Force Report	Task Force	
(a) Draft		1/30/76
(b) Final printed report		6/30/76

Date adopted: 7-23-74 New ( ); Continuing (XX); Amended (X) 3-18-75 (date).

WESTERN FEDERAL REGIONAL COUNCIL

REGION IX

P. O. BOX 36098
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NEVADA
CALIFORNIA
ARIZONA
HAWAII

Also includes AMERICAN SAMOA, GUAM and the TRUST TERRITORY of the Pacific Islands

August 6, 1975

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WEBSTER OTIS
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to the Secretary
Dept of the Interior

Vice Chairman
WILLIAM C. ARNTZ
Regional Administrator
Federal Energy
Administration

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Assistance Administration

PAUL DE FALCO
Regional Administrator
Environmental
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Secretary's Representative
Dept of Transportation

EUGENE GONZALES
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Community Services
Administration

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FRC Liaison Representative
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JOE P. MALDONADO
Regional Director
Dept of Health
Education and Welfare

GEORGE W. SMITH
Regional Director
Dept of Labor

Associate Member
BG RICHARD M. CONNELL
Division Engineer, SPD
U.S. Army Corps of Engineers

Memorandum

To: Charles T. Bourns, EPA
Chairperson, Hazardous Materials Management Task Force

From: Chairman, Western Federal Regional Council

Subject: Task Force Charge

Purpose: The Western Federal Regional Council hereby continues this interagency task force for hazardous waste management to accomplish the following broad objective: to provide a coordinated overview and proper mechanisms for technology and informational transfer relating to the management of hazardous materials in an environmentally safe manner within the Federal establishments throughout Region IX.

Background: This Task Force is a continuation of an activity which came under the sponsorship of the WFRC in April 1974. The group has met all of the approved milestones of the work plan in the past and is currently on target for its scheduled activities. The work of the group has been recognized nationally as an example of interagency coordination.

Organization: The Environmental Protection Agency is designated as the lead agency for this effort. Other participating departments and agencies include ERDA, GSA, USDA, DOT, DOI, and Department of Defense components. A member of the Council Secretariat will be designated as liaison to the Task Force.

While the main Task Force will continue to consist of some 125 designated representatives of local facilities for a large number of Federal agencies, its actions are to be carried out primarily by an Executive Steering Committee of approximately 15 members and by sub-committees. The Task Force as a whole shall meet at appropriate intervals, but not less than annually. The Executive Steering Committee will meet as often as necessary to conduct the interim business of the Task Force.

Approach: In addressing its overall objective, the Task Force will be expected to include the following work elements in its implementation plan:

1) Provide a mechanism for technology and information transfer relating to the management of hazardous materials in an environmentally safe manner for personnel within agencies who have assigned responsibilities in this area;

2) Develop and maintain a directory of individuals within agencies who are designated for contact regarding management of hazardous materials and environmental matters;

3) Develop an inventory of excess hazardous materials and wastes (including related information pertaining to these) which are in the purview of these Federal agencies;

4) Identify, develop, and disseminate recommended plans of action for environmentally safe management (transportation, storage, resale, recycling, re-use, modification, and ultimate disposal) of these materials;

5) Explore, develop, and recommend courses of action to the Council to manage hazardous materials safely where problems are identified. This may involve either recommending action to the individual agencies concerned, or implementing a multi-agency cooperative approach;

6) Coordinate inter-agency actions relating to hazardous waste management whe[illegible]sted by the agencies concerned; and

7) Coordinate final disposition actions with appropriate State agencies.

The Task Force is expected to develop its own detailed work plan for carrying out this charge and to return to the Council as needed for clarification of WFRC intent and procedures, proposed amendments to this charge and to the initial work plan, resolution of major policy or procedural issues, requests for special staff or financial resources, and periodic reporting.

Operating Procedures: Each participating agency on the Task Force will absorb the travel costs for its members to attend Executive Steering Committee and/or Task Force meetings and is expected to make available staff time for the accomplishment of Task Force work. The Council's "Policies and Procedures for Task Forces" should be used as a guide for Task Force operations and the responsibilities of members.

Reports: The WFRC may call for periodic or special reports from ~~the Task~~ Force as it deems necessary and appropriate. It is suggested that the Task Force also schedule reports to the Council to coincide with the completion of major milestones in its work plan. As provided for in the WFRC Task Force Procedures, written minutes of each Task Force and Executive Steering Committee meeting must also be submitted to this office. The Task Force is expected to complete its work and submit a final report no later than June 30, 1976.

Please feel free to call upon your Secretariat Liaison, the Council Staff Director, or myself whenever you feel we can be of assistance to the Task Force in carrying out this charge.

Webster Otis

Webster Otis
Chairman

WESTERN FEDERAL REGIONAL COUNCIL
FY 1976 OBJECTIVE AND OPERATING PLAN

WFRC GOAL # IV **ACTIVITY # IV-A:** Hazardous Materials Management

OBJECTIVE: To provide a coordinated overview and proper mechanism for technology and information transfer relating to the management of hazardous materials in an environmentally safe manner within the Federal establishment throughout Region IX.

BACKGROUND/APPROACH: This activity is a continuation of the work of the Hazardous Waste Management Task Force in FY 1975. Most of the Task Force's work will be carried out through a variety of sub-committees, with ongoing direction provided by an Executive Steering Committee.

IMPLEMENTING MECHANISM: Hazardous Materials Management Task Force **PROGRAM FUNDS INVOLVED: Yes** ☐ **No** ☒ XX

LEAD AGENCY: EPA **OTHER PARTICIPATING AGENCIES:** DOI, DOT, USDA, GSA, ERDA, DoD components

MAJOR WORK ELEMENTS/PRODUCTS	RESPONSIBILITY	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1. Develop site selection criteria	Task Force Subcommittee (USDA lead)		△													
2. DoD disposal of excess stocks of pesticides and hazardous materials.	DoD Washington	---	---	△												
3. Design computerized recycling program.	USN, San Bruno	▲	---	---	---	---	△									
4. Develop inventory of hazardous materials, based on task force agency inputs.	Task Force Subcommittee (DOI/GS lead)		△	---	---	---	---	---	---	△						
5. Develop operational criteria for hazardous material disposal sites.	Task Force Subcommittee (ERDA lead)		△	---	---	---	---	---	---	△						
6. Identify disposal sites.	Task Force Subcommittee (EPA lead)		△	---	---	---	---	---	---	---	△					
7. Prepare and circulate draft task force report.	EPA							△								

Appendix II - iv

Date adopted: 6-4-75 New ☐; Continuing ☒ XX; Amended ☐ ______ (date) ______ (date)

WESTERN FEDERAL REGIONAL COUNCIL
FY 1976 OBJECTIVE AND OPERATING PLAN

ACTIVITY # IV-A: Hazardous Materials Management (continued)

MAJOR WORK ELEMENTS/PRODUCTS	RESPONSIBILITY	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
8. Complete final report and submit to WFRC	Task Force												△			
9. Review and act on final task force report.	WFRC													△		
10. Carry out technology transfer relating to the task force activity.	Task Force agencies	△	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	△

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WORK ACTIVITY TITLE: Hazardous Materials Management Task Force

PURPOSE AND BACKGROUND: The Hazardous Materials Management Task Force originated as an "ad hoc" group evolving from a discussion meeting of Federal agencies on August 1-2, 1973. This meeting, sponsored by the Environmental Protection Agency, Region IX, investigated the possibility of joint Federal agency action for the management of hazardous wastes in an environmentally safe manner.

At subsequent meetings, it became evident this activity must have official recognition in order to assure continued resource allocation by the participating agencies. The logical sponsor was the Western Federal Regional Council; on April 23, 1974, the official charge and assignment of Task Force status was made. The Task Force was continued by Council action during FY 1976.

The activities of the Task Force have attracted national attention. At least one other region has sent an observer to learn how the Task Force operates and to assess its accomplishments.

OBJECTIVES:

1. During the FY 1976 work year the Task Force developed operational and site selection criteria for hazardous material disposal sites. It is now appropriate, by working through the States, to utilize these criteria for actual site selection and operation.

2. To jointly sponsor, with the California State Dept. of Health, a symposium on hazardous waste material management. This would be a technology transfer activity available to a national audience.

APPROACH:

Contacts with various Governor's offices to establish a work plan for each State. Reviewing the site selection and site operational criteria with the appropriate State agencies. Work with the States to establish enabling legislation and regulations for the control of hazardous waste disposal. The Task Force has already been contacted by the State of Arizona for major assistance in this field of activity. Work with the State of California to conclude a successful symposium.

EVALUATION: Log the number of conferences, meetings, etc., with State/local officials in establishing work plans, site selection, operational criteria, enabling legislation and regulations and concurrently assessing the relative success of these efforts. Successful conclusion of the proposed symposium including the printing of the Proceedings.

WORK ACTIVITY TITLE: HAZARDOUS MATERIALS MANAGEMENT TASK FORCE

LEAD AGENCY: EPA

MECHANISM: Task Force

Other Participating Agencies: ERDA, USDA, DOI, DOT, C/E and DOD; California, Arizona, Nevada, Hawaii, Guam, Trust Territory and American Samoa.

Annual Objectives	Major Milestones	Responsibility	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
1) During the FY 1976 work year, the Task Force developed operational and site selection criteria. Now appropriate to utilize these criteria for actual site selection and operation.	a) Contact various Governor's offices to establish a work plan for the individual State.	Task Force	X	X		
	b) Review the site selection and site operational criteria with the appropriate State agency.	Task Force	X	X	X	X
	c) Work with State to establish enabling legislation, regulations and site selection and operation.	Task Force	X	X	X	X
2) Jointly sponsor, with the California State Dept. of Health, a symposium on hazardous waste material management. A technology transfer activity.	a) Establish location, time and program for the symposium with the State of California.	Chairman and Select Committee.	X			
	b) Support logistics and administration for the actual symposium.	Chairman/Select Committee.		X		
	c) Assist in the preparation of the procedings for the symposium.	Chairman/Select Committee.			X	

Date Adopted: October 5, 1976

Date Revised:

U.S.GPO:1978-794-902/2